

1 **MODULAR BUSINESS TRANSACTIONS PLATFORM**

2 **BACKGROUND OF THE INVENTION**

3 The present invention relates to a financial transaction system and method, and
4 more particularly, to a network-based system and method for billing and payment.

5 Recently, there has been an increase in the popularity of performing financial
6 transactions using the Internet as a centralized network for linking the individual financial
7 systems of a plurality of entities transacting business with one another. With the recent
8 explosion in e-commerce, the increasing acceptance of the Internet as a less expensive
9 and more efficient way of doing business, and the advent of new server technology and
10 sophisticated online security systems, Internet-based financial transactions are becoming
11 ever more common. Advantageously, an Internet-based financial transaction system for
12 bill presentment and payment may reduce many of the transaction costs associated with
13 other financial transaction systems, such as preparation costs, banking fees, and costs for
14 clearing, reconciling and closing. Moreover, such a transaction system may seamlessly
15 handle transactions from virtually any entity with Internet access, regardless of the nature
16 of the business, geographic location, size, or trading currency, even those entities for
17 which the costs of traditional invoicing, presentment and payment have traditionally been
18 high.

19 Traditionally, invoice presentment and bill payment procedures have required a
20 capital outlay for the equipment to prepare and distribute each invoice, as well as collect
21 and reconcile payment of the invoice. Additionally, there are costs and collection delays
22 associated with the multiple steps required between multiple parties to effect invoice
23 presentment and bill payment. Such steps may include the payee's preparation and

1 distribution of invoices by mail (which may take up to a week to reach payers) or
2 electronically; one or more invoice approvals by individuals or departments within the
3 payer's organization (e.g. a purchasing manager); invoice adjustment or dispute by other
4 individuals or departments; payment authorizations by other individuals or departments;
5 payment issuance, either electronically or by issuance of a paper instrument, such as a
6 check, (again, typically by mail); receipt of payment at the payee's side, either by the
7 payee, the payee's bank, a lockbox, or other payment receipt entity; and processing of the
8 payment either at the payee's bank, at the payee's accounts receivable, or both. This
9 entire process may take several weeks, and requires separate accounting records to be
10 kept and harmonized at both the payer's (accounts payable) and payee's (accounts
11 receivable) sides, and/or within other decentralized recordkeeping systems.

12 There are further costs and collection delays associated with any adjustments to
13 the invoice that may be made by either the payer or the payee. When an adjustment is
14 made within one recordkeeping system, the adjustment must be communicated to the
15 other system(s) so that a corresponding adjustment can be made. For example, an invoice
16 adjustment made by the payer results in the payer's entry of an adjusted invoice amount
17 into its accounts payable, as well as the payer's mailing a copy of a manually-adjusted
18 invoice to the payee, so that the payee can update its accounts receivable.

19 SUMMARY OF THE INVENTION

20 In a system consistent with the invention, a plurality of modular business objects
21 may be selectable by the user of a payer system for execution (e.g. invoice review,
22 invoice adjustment, and invoice payment). The business objects may generate extensible
23 markup language (XML) calls to a database interface, which may interact with the

1 database and return XML responses to the business objects. Invoices may be batch loaded
2 onto the database from biller systems, and payer systems may receive notification by e-
3 mail that an invoice has been issued, so that they may subsequently effect payment
4 electronically. Thus, multiple parties may no longer need to exchange paper or electronic
5 documents for invoicing and payment. Instead, a financial transaction system consistent
6 with the invention may allow payers and billers to view invoice data via either a standard
7 web browser (in which case appropriate HTML/XML translations may be made) or a
8 custom application, and to print paper documents derived from those records, as
9 necessary, and use those electronic records to update individual accounting systems,
10 depending on legacy or other requirements.

11 In one embodiment, an electronic bill presentment and payment system consistent
12 with the invention comprises at least one biller system and at least one payer system in
13 communication with a payment processing system. The payment processing system
14 comprises a database including global information relating to the biller system and the
15 payer system, and an application server for storing at least one modular business object
16 containing specified instructions to govern financial transactions between the biller
17 system and the payer system based on the global information. The application server
18 permits replacement of a business object with another modular business object containing
19 other specified instructions using the same global information.

20 In another embodiment, at least one business object contains specified
21 instructions for modifying the global information, and the application server permits
22 replacement of a business object with another modular business object containing other
23 specified instructions for modifying the same global information.

In method form, a method for electronic bill presentment and payment comprises:
storing global information relating to a biller system and a payer system; storing at least
one modular business object containing specified instructions to govern financial
transactions between said biller system and said payer system based on said global
information; permitting said biller system and/or payer system to access said at least one
business object for executing a financial transaction; and permitting replacement of said
business object with another modular business object containing other specified
instructions using the same said global information.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of an electronic bill presentment and payment system
consistent with the present invention;

Figure 2 is a flowchart illustrating an exemplary fundamental operation of one of
a plurality of web servers in one embodiment of the invention;

Figure 3 is a flowchart illustrating an exemplary operation of the application
server in one embodiment of the invention;

Figure 4 is a flowchart illustrating an exemplary invoice loading operation in one
embodiment of the invention;

Figure 5 is a workflow diagram illustrating exemplary host user operations in one
embodiment of the invention;

Figure 6 is a workflow diagram illustrating exemplary biller system operations in
one embodiment of the invention;

Figure 7 is a workflow diagram illustrating exemplary biller system
administration operations in one embodiment of the invention;

Figure 8 is a workflow diagram illustrating exemplary payer system operations in one embodiment of the invention;

Figure 9 is a workflow diagram illustrating exemplary payer system invoice/payment operations in one embodiment of the invention;

Figure 10 is a workflow diagram illustrating exemplary payer system reporting operations in one embodiment of the invention; and

Figure 11 is a workflow diagram illustrating exemplary payer system administration operations in one embodiment of the invention.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

Exemplary Bill Presentment and Payment System

Figure 1 illustrates an electronic bill presentment and payment system 10 consistent with the present invention. System 10 includes at least one biller system 12, at least one payer system 14, at least one business service provider system 16, and a payment processing system ("ASP") 18, in communication with one another via a network 20. The network 20 may be a TCP/IP compliant network, such as the Internet.

It should be appreciated that each of the biller system 12, payer system 14, business service provider system 16 and ASP 18 (also referred to herein as "workstations") may be remotely located from each other and may be controlled by separate entities.

Alternatively, permutations of each of the biller system 12, payer system 14, business service provider system 16 and ASP 18 may be commonly controlled and/or located at a single entity.

More specifically, the biller system 12 and payer system 14 may interface with the ASP 18 via a web browser or other TCP/IP compliant software. The biller system 12

1 and payer system 14 may comprise computing devices with appropriate network interface
2 hardware and software for establishing a TCP/IP session with a web server 30 at the ASP
3 18 and for executing an application for interfacing with the web server 30. The
4 application may be typical HTML Internet web browser software, such as Netscape
5 NavigatorTM or Microsoft Internet ExplorerTM, which is capable of receiving HTML
6 documents from the web server 30 and returning HTTP posts to the web server 30. The
7 application may alternatively be one or more direct real-time or batch-controlled
8 interfaces accessing real-time TCP/IP or other network type sockets.

9 The business service provider system 16 may be an exchange or other service
10 bureau application providing a plurality of business processing services to its clients
11 (which may include the biller system 12 and/or payer system 14). One such business
12 processing service may be electronic bill presentment and payment, as may be provided
13 using a system and/or method consistent with the invention. In such a configuration,
14 from the point of view of the service provider system 16, the ASP 18 may be a back end
15 system for performing such bill presentment and payment portions of the overall services.
16 The service provider system 16 may communicate with the ASP 18 utilizing data files
17 with a predefined format to assure that the content of such data files may be recognized
18 by the intended hardware and/or software. In one embodiment, the predefined format is
19 an extensible markup language (XML) schema and the data files are XML messages.
20 Utilizing the Internet 20, the service provider system 16 and the ASP 18 may establish a
21 TCP/IP session and exchange XML messages.

22 It should be appreciated that, in an alternative embodiment, a biller system 12 or a
23 payer system 14 may operate an accounting system interface application rather than a

1 web browser. In this case, the biller system 12 or payer system 14 will communicate
2 with the ASP 18 utilizing XML messages, and the XML communication may be similar
3 to that which may occur between the ASP 18 and the service provider system 16. Such
4 an accounting system interface application may enable the biller system 12 or payer
5 system 14 to avoid manually reading data from an HTML document and manually re-
6 entering into an accounting system. More specifically, the XML messages may be used
7 to directly input content into the accounting system or, at a minimum, automatically
8 populate content onto an accounting system data entry screen.

9 One or more web servers 30 may be located in a secured zone 22 between two
10 routers 24, 26 serving as firewalls, one for protecting the internal private network 28 of
11 the ASP 18 and one for blocking unauthorized Internet access. This zone 22 is often
12 referred to idiomatically as a DMZ (i.e. "de-militarized zone"). It is noted that one or
13 more firewalls may be placed between any one of a number of components of the present
14 invention for security purposes. In this standard firewall configuration of a DMZ 22, the
15 web servers 30 may be coupled to the Internet 20 by a first router 24 and coupled to a
16 private network 28 by a second router 26. On the "front end", the web servers 30 may
17 establish the TCP/IP sessions and communicate with the biller systems 12, payer systems
18 14, and business service provider systems 16, as described above. On the back end, the
19 web servers 30 may use XML messages to make remote processing calls (RPCs) to an
20 application server 32 (described hereinbelow in further detail) and may receive XML
21 response messages to such calls. An invoice loader 34 (described hereinbelow in further
22 detail) may be provided for transmitting batch input to a database server 36, which may
23 store invoice and other financial, transactional, or non-financial data. Those skilled in the

1 art will recognize that such data may be generated by one of any number of billing
2 systems, e.g., SAP, Oracle Financials, JD Edwards, People Soft, Great Plains, etc. The
3 data outputted by these billing systems and input into the system may come in a variety
4 of formats including raw data, print file format, and X-12 ANSI 810 (EDI). The database
5 server 36 may include a database application 35 (described hereinbelow in further detail)
6 for reading and writing to the raw data stored on the magnetic media of the database.

7 Web Server

8 With reference to the flowchart of Figure 2 in conjunction with Figure 1, an
9 exemplary fundamental operation of a web server 30 in accordance with one embodiment
10 of this invention is shown. A TCP/IP session may be established at step 40 with a remote
11 client, which includes appropriate exchanges of passwords and/or other authentication
12 messages to verify that the remote client has authorized access. Clients may be either
13 workstations which interface with the server 30 using a browser interface, or,
14 alternatively, software clients which interface with the server 30 using XML messages.
15 Step 42 represents a determination as to whether the remote client is operating a web
16 browser or whether the client is operating an XML enabled application. If the remote
17 client is operating a web browser, the server 30 may send out an initial HTML document
18 to the client at step 48. This initial document may be the main menu page that the
19 operator at the remote client might expect to see immediately after logging onto the
20 system utilizing the browser. The server may then receive an HTTP post from the remote
21 client at step 50 and, in response to such HTTP post, build an XML message for making
22 a remote processing call to the application server 32 at step 52. More specifically, the
23 XML message is based on the content of the post and a predetermined schema for the

1 function that the operator of the remote client has requested via the HTTP post. For
2 example, if the operator had selected to view a list of open invoices from the HTML
3 menu document, the server might build an XML message for requesting open invoices
4 from the application server 32 based on the schema for viewing a list of open invoices in
5 response to the HTTP post.

6 Step 54 represents the server making an XML remote processing call to the
7 application server 32 utilizing the XML message. An XML response message may be
8 received back from the application server 32 at step 56. The web server may then utilize
9 the content of the XML response message to build an HTML document to send to the
10 remote client in response to the remote client's HTTP post at step 58. More specifically,
11 each web server 30 may include a style sheet database 52 that stores style sheets for
12 various documents that may be sent to remote clients and may provide different style
13 sheets for the same document based on different clients. As such, the branding, look and
14 feel, and layout of documents may be varied on a client-by-client basis. The step of
15 building an HTML document may therefore also include selecting a style sheet
16 corresponding to the remote client and combining the style sheet with the content of the
17 XML response message to build the HTML document. The HTML document may then
18 be sent to the remote client at step 59, and, returning to step 50, another HTTP post may
19 be received and the foregoing steps repeated for that HTTP post.

20 Alternatively, if at step 42 the remote client is determined to be a client utilizing
21 an XML enabled application instead of a web browser, the web server may send an initial
22 XML message to the remote client at step 60. The web server may then receive an XML
23 message from the remote client at step 62 and validate the XML message at step 64. If

1 necessary, the content may be transformed into an XML message compliant with the
2 schema needed for making a remote processing call to the application server at step 67 if
3 it did not validate at step 64.

4 The schema-compliant XML message may then be used to make the remote
5 processing call to the application server at step 66. At step 68, a response XML message
6 may be received from the application server, and, at step 70, the response XML message
7 may be returned to the remote client. Thereafter, returning to step 62, another XML
8 message may be received and the foregoing steps may be repeated.

9 It should be appreciated that the above description represents an exemplary
10 process utilized for interacting with each remote client. In operation, the server may be
11 operating with a plurality of remote clients simultaneously and/or utilizing a multi-
12 tasking based operating environment. Furthermore, a plurality of web servers 30, each
13 communicating with a plurality of different clients, may each be capable of making XML
14 calls to the application server 32 to perform the above described functions.

15 Application Server

16 The application server 32 may perform the main processing of the business
17 functions carried out by the ASP 18. The application server 32 may operate within a
18 hardware and software environment. The software environment may comprise a plurality
19 of applications that may be object-oriented and/or table-driven, whereby new products,
20 applications, modules and/or transaction types may easily be integrated. Such software
21 components may include, e.g., an operating environment 41 (e.g. Microsoft Windows
22 NTTM, Windows 2000TM, or Sun SolarisTM), transaction processing software (e.g.
23 Microsoft Transaction ServerTM), communications software, database tools (e.g.

1 RogueWave™), query and/or reporting software (e.g. Seagate's Crystal Reports™), a
2 database interface 33, a message parser/builder 51, a business function selection object
3 38, one or more business objects 37, and/or one or more other applications, which may be
4 table-driven. As described hereinbelow with respect to Figure 3, the message
5 parser/builder 51 may verify access levels of clients accessing the web servers 30, as well
6 as verify the format of XML messages and build appropriate messages to pass to the
7 appropriate selection objects 37 for execution.

8 The transaction processing software may be a component-based transaction
9 processing application for developing, deploying, and managing high performance,
10 scalable, and robust enterprise, Internet, and intranet server applications, which defines
11 an application programming model for developing distributed, component-based
12 applications and provides a run-time infrastructure for deploying and managing these
13 applications. A clustering application may optionally be provided for load balancing and
14 fail-over services to cluster distributed application servers into a single, high-
15 performance, highly available environment of application server resources, thereby
16 avoiding bandwidth, latency, and congestion problems and providing multi-server
17 scalability for unlimited concurrent user access. The query and/or reporting software may
18 be an application or object providing for an environment in which client reports and file
19 download formats are easily customizable. One or more business objects 37 or
20 applications may reside on the application server 32, such business objects 37 or
21 applications being the components that perform the central transactional functions of the
22 server 32. The business objects may receive XML messages in a predefined format and
23 return XML response messages in a predefined format. Menus of options (as shown in

1 Figures 5-11 and described hereinbelow) may be made available to the client by the
2 message parser/builder 51 (or, as those skilled in the art will recognize, by one of any
3 number of components of the invention, e.g., selector or another business object).

4 As discussed hereinbelow, exemplary business objects may include an object for
5 reviewing invoices, an object for making adjustments to invoices, and an object for
6 initiating invoice payment. One or more of any of the foregoing described applications
7 may access the database server 36 via the database interface 33 and/or database
8 application 35 for purposes of retrieving and modifying its data. Other applications may
9 be provided, consistent with the provision of billing, payment, or other financial or non-
10 financial services. For example, an e-mail notice application may be provided for
11 sending e-mail notices of the invoices to one or more payer systems 14 which are set up
12 to receive e-mail notices. While the foregoing components of the application server 32
13 may be referred to herein as "applications", "modules", "components", "interfaces",
14 and/or "objects", it should be understood by those skilled in the art that such labels
15 should not be construed in any way to be limitations. Any of the components of the
16 application server 32 may comprise machine-readable programming code embodied in a
17 tangible medium, e.g., Java beans. Depending on whether the embodiment of the
18 invention is object-oriented, such components may or may not be formal objects. A table
19 at the end of this Detailed Description lists exemplary objects and corresponding XML
20 messages in one embodiment of the invention. It is noted that the business objects of the
21 present invention should be modular, i.e., functionality may be added to, deleted from, or
22 modified in the system by adding or removing business objects. Thus, each business
23 object should be constructed with expected input and output data only, as though it were

1 a "black box". The internal processes of each business object "black box" are not
2 relevant to the overall operation or maintenance of the system, to the extent that any
3 business object with a given set of expected input and output data may be substituted for
4 an existing business object for performing a similar or identical function having the same
5 set of expected input and output data, wherein the system need not ever require
6 knowledge of the internal operation of the business object for proper functioning or
7 maintenance.

8 With reference to the flowchart of Figure 3, which illustrates an exemplary
9 operation of the application server 32 in one embodiment of the invention, in conjunction
10 with Figure 1, the general operation of the application server 32 will now be described.
11 First, an XML remote processing call may be received at step 72 from one of the web
12 servers 30. The message parser/builder 51 may receive from the web servers 30 either an
13 XML message from the software client or an HTTP post from the workstation client. If
14 an XML message is received from a software client, the message parser/builder 51 may
15 verify that the particular client has appropriate access levels for sending such XML
16 message, thereby preventing a person from manually writing an XML message for an
17 option that is outside of the permitted workflow for the client. After verifying access
18 levels, the message parser/builder 51 may verify that the XML message is the exact
19 format needed for passing to the selection object 37. If not, data may be extracted and
20 the appropriate message is built. The message may then be passed to the selection object
21 37, which may pass the message to the appropriate business object 37 for execution. In
22 the case of an HTTP post from a workstation, the message parser/builder 51 may build an
23 XML message for performing the transaction based on the post and the access levels.

1 The message may then be passed to the selection object 37, which may pass the message
2 to the appropriate business object 37 for execution.

3 A business function selection object 38 may then make a call at step 74 to the
4 appropriate business object 37 associated with the XML call. The selected business
5 function object may execute and generate at step 76 XML calls to the database interface
6 33. The database interface 33, in turn, may utilize predefined instructions at step 78 for
7 directing the database server 36 to access and/or write data into the database tables. In
8 one embodiment, the predefined instructions may be a group of instructions, e.g., SQL
9 calls. It is noted, however, that the business function objects 37 may not directly perform
10 the SQL calls at step 78. The database interface 33 object may exist so that the relational
11 structure of the database 36 may be modified without modifying each of the business
12 function objects 37. Each database relational structure may merely need to be defined in
13 a database structure file (not shown) that may be used by the database interface 33 object
14 to structure the appropriate SQL calls for execution at step 78. A response to the SQL
15 call may then be received at step 80 from the database 36. A single XML call at step 76
16 from a business function object 37 may cause the database interface 33 object to initiate
17 several SQL calls at step 78. Therefore, if more than one SQL call is necessary (as
18 determined at step 90), a plurality of such calls may be initiated at step 78, as necessary,
19 and the corresponding responses may be received at step 80. Once the database interface
20 33 object has completed the SQL calls at step 78, it may build (at step 82) and return (at
21 step 83) a response XML message to the business function object 37. The response XML
22 message may then be received at step 84 by the business function object 37. A business
23 function object 37 may need to initiate several XML calls to the database interface 33

1 object during performance of the selected business function, at step 76. Therefore, if
2 more than one XML call is necessary (as determined at step 85), a plurality of such calls
3 may be initiated at step 76, as necessary, and the corresponding database calls may be
4 generated (at step 78) and may be received (at step 80), and appropriate XML responses
5 may be built (at step 82), returned (at step 83), and received (at step 84). Once the XML
6 calls to the database interface have been completed at step 76, (i.e. the business function
7 has been completed), the business function object 37 may build a response XML message
8 at step 86 and may return the XML response message to the web server 30 at step 88, and
9 the foregoing steps repeated for a subsequent XML remote processing call which may be
10 received at step 72.

11 Invoice Loader

12 With reference to the flowchart of Figure 4, which illustrates an exemplary
13 invoice loading operation in one embodiment of the invention, in conjunction with Figure
14 1, the general invoice loader 34 operation will now be described. The invoice loader 34
15 module may provide batch input to the database 36. This may be useful because many
16 enterprise accounting systems may export an invoice file on a periodic basis. The batch
17 invoice file may then be sent at step 100 to the invoice loader module 34 via one of any
18 number of means 53, e.g., as an e-mail attachment, FTP load, an EDI VAN (value added
19 network), or another private network link. Therefore, the invoice loader module 34 may
20 include a network interface (not shown) for coupling to the Internet and may include one
21 or more private network interfaces (not shown) for coupling to EDI VAN's or other
22 private network interfaces. Each of these network interfaces may be a network card, or
23 may comprise such other hardware and software as may be appropriate to effect the

1 network interconnection. Alternatively, the invoice loader module 34 may couple only to
 2 a local area network 28 at the processing facility (i.e. at the geographic location of the
 3 ASP 18), and one or more routers 24, 26 in the DMZ 22 may serve to couple the invoice
 4 loader 34 to the Internet 20 and to each private network, as may be appropriate.

5 Once the invoice loader module 34 receives the invoice file at step 102, it may
 6 verify that the file is in the appropriate invoice loader format at step 104. Typically, the
 7 biller may be responsible for running the necessary translation program to convert the
 8 invoice file from the biller's accounting system to the invoice loader format. However, it
 9 may be possible for the file to arrive at the invoice loader module in the accounting
 10 system format, in which case the invoice loader module may then identify the accounting
 11 system format and run an appropriate translation program at step 106 to convert to
 12 invoice loader format. Exemplary formats from which invoices may be loaded include
 13 ANSI X12 810, flat ASCII files, or well formed XML schemas.

14 Once the invoice file is in the invoice loader format, the invoice loader module 34
 15 may enter the invoices into the database 36 at step 108 and may, if appropriate, send out
 16 e-mail notices at step 114 to one or more payer system 14 users indicating that an
 17 invoice is available. To this end, the invoice loader module 34 may therefore include an
 18 invoice loader application 39. The invoice loader application 39 may make appropriate
 19 calls to a database application 35 for loading the invoices. More specifically, the
 20 database application 35, which may run on the database server 36 (or, alternatively, on
 21 the application server 32), may provide for the raw data stored on the magnetic media to
 22 be logically accessible in a relational database table format. Predefined instructions for
 23 accessing and writing data into the tables may be sent to the database application 35. In

1 one embodiment, the predefined instructions may be a group of instructions, e.g., SQL
2 calls. The invoice loader application 39 may therefore execute appropriate SQL calls for
3 writing the invoice data to the database 36.

4 Once the invoice data is in the database 36, e-mail notices of the invoices may be
5 sent out to one or more payer system 14 users who are set up to receive e-mail notices at
6 step 114. An e-mail notice application 31 may be provided on the application server 32
7 for making appropriate SQL calls to the database 36. Such calls may be made for
8 purposes of detecting new invoices at step 110, as well as determining, based on the
9 identity of the payer, if an e-mail notice is required, at step 112. More specifically, the e-
10 mail notice application 31 may search the database 36 for a flag or other identifier of a
11 new invoice, and then, for each new invoice, may obtain data from a payer's profile
12 indicating whether an e-mail notice is appropriate, and if appropriate, the address to
13 which the e-mail notice should be sent. The e-mail notice application 31 may then send
14 the e-mail. Alternatively, the e-mail notice application 31 may run on the invoice loader
15 module 39 instead of running on the application server 32.

16 Database Server

17 The database server 36 may be an OLTP (on-line transaction processing) system,
18 embodied in a server, such as Microsoft SQL Server 7TM, Oracle 8TM, Sybase Adaptive
19 Server R12TM, DB2TM, InformixTM, or another ODBC-compliant database. The database
20 server 36 may be configurable for sharing with other applications, including access by a
21 report writer application, and may comprise a distribution and replication protocol (DRP)
22 device. A backup database server (not shown) may also be provided, wherein some or all
23 of the data on the database server may be mirrored to the backup database server. In this

1 configuration, in the event an application performing a transaction on the database server
2 experiences failure, the application may start at the backup server location and proceed
3 from the point of failure, thereby preserving transaction integrity.

4 The database 36 may be a relational database, i.e., data management technology
5 modeled such that all data is organized as though it is formatted into tables, with the table
6 columns representing the table's fields or domains and the table rows representing the
7 values of the table's fields or domains. Data between tables may be related to one
8 another, using, for example, pointer data. Data may be logically organized as tables but
9 not necessarily physically stored as such. The database interface 33 may access and
10 update data via a language interface or "structured query language" (SQL) calls. The
11 database 36 may comprise a relational database where the payer and biller profiles
12 (which may include access control data and/or dispute rules) may be related between
13 payer systems 14 and biller systems 12. The message parser/builder 51 may retrieve
14 access control data from the database 36 when a workstation client logs on. Similarly,
15 business service provider profiles may be stored in the database 36 and may include
16 access control data for one or more business service providers 16.

17 Invoice data stored on the database 36 may include invoice-specific data received
18 from the biller 12 each time the biller 12 sends an invoice to the ASP 18. Such data may
19 include, e.g., the identity of the biller and payer, invoice line items, and settlement and
20 payment options. Biller profile data may be stored on the database 36 and may include
21 items that a biller 12 need only enter once, and may change only periodically thereafter.
22 Such items may include dispute rules and access levels for each biller workstation with

1 system access. The dispute rules may be payer-specific or may be may applied globally
2 to all payers.

3 Payer profile data may be stored on the database 36 and may include items that a
4 payer 14 need only enter once, and may change only periodically thereafter. Such items
5 may include access levels for each payer login ID (referred to as a payer workstation)
6 with system access.

7 Client Types

8 In one embodiment, two client types may access the ASP 18, a workstation client
9 (e.g. a browser) interfacing with the system 18 utilizing HTML documents and HTTP
10 posts, and a software client interfacing with the system 18 utilizing XML messages.

11 Both billers and payers may comprise workstation clients, and the message parser/builder
12 51 may present different work flow options to each via menus. Host (or "administrator")
13 users and help desk users may be biller or payer workstations having access levels which
14 are a subset of all access options available to the biller or payer. Host users (who may be
15 affiliated with a business service provider system) may control most non-invoice related
16 data and functionality. A biller system user may control invoice related data and
17 functionality associated with a specific billing company. A payer system user may have
18 specific functionality associated with all related invoice transactions to the paying
19 company. Help desk users may be provided access to the system in order to troubleshoot
20 users' questions.

21 Host users (also referred to herein as "administrators") may configure and
22 maintain the system. A single SuperUser account may be established for each installation
23 of the system. The SuperUser may be pre-configured with the system and have all

Login and Access

The application server 32 may authenticate each client via a logon process, and each client may have a specific set of access levels for performing certain functions, which may be a subset of all of the functions available to the particular biller, payer or business provider. The message parser/builder 51 may maintain a table of access levels for each client which is currently logged into the system. With respect to transaction requests, when an HTTP post is received from a workstation or an XML message is received from an application client, the message parser/builder 51 may only build the XML message from the HTTP (or pass the XML message received) if the client has appropriate access levels. With respect to responding to a transaction request, the message parser/builder 51 may control the clients' work flow and limit the menu choices which appear in the outbound XML message to those that would be available as next steps in the work flow for the particular client.

The system may permit a user (i.e. the operator of a biller, payer or business service provider workstation) to gain access by clicking on a "login" button on the initial screen, or by going directly to the logon URL without having to navigate through the initial pages by simply entering the full URL in the browser, "bookmarking" the page, or using a "favorites"-type feature of the browser. The system may present the user with a logon page, wherein he or she must specify a valid user ID and password to gain access. If an invalid ID or password is entered, the user may be told that an invalid ID/password was entered. In one embodiment, if a user enters a valid user ID and an invalid password five times in a row, the system may "disable" the user ID (i.e. the system 18 will not present the workstation defined by the ID with other system options until another

1 workstation, with appropriate access levels, performs a function to reset the “disabled”
2 account). If, after this period, the user enters a valid ID and password, the system may
3 display a message indicating that their account has been disabled.

4 Alternative authentication methods may include any method of verifying the
5 identity of a user or a component of the invention and may include a security mechanism
6 such as one or more of a digital signature, a PIN number, a password, a smart card, or a
7 “master” or “challenge” key. In one embodiment of the invention, an XML script may
8 create a Java applet that monitors the active application and interacts with a separate
9 security server residing within the application server. The Java applet may be
10 configurable to interrupt the current application to prompt for authentication, such as by a
11 digital signature, a PIN number, a password, or a master key, and to communicate with
12 the security server to effect the authentication. If the security operation is successful, the
13 application may continue without interruption; otherwise, the application may be
14 terminated according to the XML script. Alternatively, the foregoing process or a part
15 thereof may be used for transferring data between any two components in an embodiment
16 of the present invention, including those external to the invention, such as an end user, a
17 client, a financial institution, a back office, an administrator, an e-mail or fax recipient, or
18 a server. One or more of the foregoing security operations may be implemented using
19 application security middleware, such as Ubizen’s MultiSecure™ ETS, MultiSecure™
20 ASE, or MultiSecure™ WAC. Further security means may comprise one or more of the
21 following: password or PIN number protection, use of a semiconductor, magnetic or
22 other physical key device, biometric methods (including fingerprint, nailbed, palm, iris,
23 or retina scanning, handwriting analysis, handprint recognition, voice recognition, or

1 facial imaging), or other log-on security measures known in the art. Password protection
2 may include certain validity requirements upon establishing a password, e.g., disallowing
3 more than two consecutive characters in a password, disallowing the same password for a
4 minimum of six consecutive password changes, and/or disallowing more than one user-
5 initiated password change per day. Passwords may be set to expire after a certain number
6 of days, and an inactive user account may be set to expire or become disabled after a
7 certain number of days of nonuse.

8 Following logon, as described above, a user may be presented with predetermined
9 work flow options based on the access levels available for his or her particular
10 workstation.

11 Security

12 Point-to-point data communications over the Internet may be handled by secure
13 sockets between the web server 30 and client 12, 14, 16. Exemplary protocols used may
14 include Netscape's Secure Socket Layer (SSL) or secure HTTP. As those skilled in the
15 art will recognize, other embodiments of the invention may include one of any number of
16 methods for two-way data encryption and/or digital certification for data being input to
17 and output from the web server 30, to provide security to data during transfer. In
18 particular, an algorithm such as Triple DES may be used to encrypt such data as account
19 numbers, credit card numbers, tax ID numbers and/or passwords.

20 Host User Workflow

21 Figure 5 illustrates an exemplary host user workflow in one embodiment of the
22 system. When a user logs in 501 to the system using the user ID of a host user, the
23 system may display a host administration or "welcome" page 502. The system may

1 display the user's name at the top in the form of a "Welcome 'Username'" message, for
2 personalization. The system may display a host administration page containing host
3 statistics and a list of "action items" with current counts and links to the corresponding
4 pages. Such counts may include biller count, payer count, enrollment request count,
5 connected user count, invoice load error count, total invoice count, and paid invoice
6 count. The system may calculate these reported statistics at the time the active user logs
7 on to the system and/or may update these statistics in real time. As part of reporting these
8 statistics, a query tool may be integrated into the system to generate pre-formatted
9 reports. The system may permit the host user to return to this page by clicking on a link
10 that may be present on every page during system access. One area of the screen may
11 contain navigation buttons grouped into categories, e.g., administration 503 and reports
12 504. The system may permit these categories to be expanded into subcategories that
13 modify another portion of the screen. One area of the navigation frame may contain the
14 user name (not the user ID) who is logged on. The system may permit clicking on this
15 link to modify the user's basic profile information, which the system may store as global
16 information on the database.

17 The system may permit a host user to select an option to edit payers 507, wherein
18 the system may permit the administrator to add, modify, or delete payers from an edit
19 payer page 508. A payer may be a company that does business with one or more billers
20 in the system. Each payer system may have one or more users that will have certain
21 permissions. The edit payer page 508 may contain a list of current payers in the payers
22 list box. When an administrator selects a payer, the system may display information for
23 that payer in the company information section. The system may permit an administrator

1 to add information for a new payer in the company information section and select "add"
2 to add the new payer. The system may permit company data to be entered for the
3 following exemplary fields, which the system may store as global information on the
4 database: name, "division", address, city, state, zip, country, SIC code, TIN, and
5 organization type. The system may require the company name plus "division" to be
6 unique. The system may permit modify and delete operations to be performed on the
7 currently selected payer. The system may require fields for company information, such
8 as name and phone. The system may display the list of payers and permit search and
9 find operations, next and previous page navigation, first letter selector navigation, and
10 scrolling navigation, in order to effectively display large numbers of payers.

11 The system may provide a user list box, which may be populated with the selected
12 payer system's user names. As the administrator clicks on each user in the list, the system
13 may display the user's information in the user information section. The system may
14 provide an "edit users" option for directing the administrator to an "edit users" page, if
15 the payer has been saved to the database. The system may provide an "edit users" page
16 to allow the administrator to add, modify, or delete users associated with the current
17 payer. This page may display the name of the payer at the top. The system may permit
18 the host user to select an option to edit the active user profile 505, wherein the system
19 may direct the host user to a page 506 displaying the organization name of the host, biller
20 or payer at the top, to establish the context of the current edit. The system may permit
21 information to be maintained and edited at this page, which the system may store as
22 global information on the database, including, e.g., last name, first, middle, phone, fax, e-
23 mail, e-mail2, user id, password, confirmation, language, currency and privilege group.

1 The system may require certain fields for user information, such as last name, first name,
2 e-mail and phone. The system may provide a reset password button to reset the selected
3 user's password to the default setting (e.g. user's last name). The system may also permit
4 the administrator to add a new user to the current payer by entering information into the
5 user information section and selecting "add". The system may require the combination of
6 last name, middle initial and first name to be unique. The system may permit modify and
7 delete operations to be performed on the currently selected user. The system may
8 provide a checkbox for temporarily deactivating a user. The system may automatically
9 send an e-mail to a new user after they have been added, informing them of how to
10 connect and logon to the system. The system may not permit a host user to set
11 permissions. The system may permit a host user to create biller or payer system
12 administrator users, both of whom may be afforded all permissions.

13 The system may permit the host user to select an option to edit billers 509,
14 wherein the system may permit the administrator to add, modify, or delete billers from an
15 edit biller page 510. A biller may be a company that does business with one or more
16 payers in the system. Each biller system may have one or more users that will have
17 certain permissions. The edit biller page 510 may contain a list of current billers in the
18 biller list box. When an administrator selects a biller, the system may display the
19 information for that biller in the company information section. The system may permit
20 the administrator to add information for a new biller in the company information section
21 and select "add" to add the new biller. The system may permit company data to be
22 entered for the following exemplary fields, which the system may store as global
23 information on the database: name, address, city, state, zip, country, SIC code, TIN, and

1 default template type. The system may require that the company name be unique. The
2 system may permit modify and delete operations to be performed on the currently
3 selected biller. The system may require certain fields for company information, such as
4 name and phone.

5 The system may permit a host user to select an option to edit biller websites and
6 logos, directing the user to a biller website and logo page 511. The system may display a
7 list of billers, and upon selection of a biller from the list, the system may populate the
8 company information area with details about the current biller. For each biller, the
9 system may permit a list of company logos and websites to be edited. The system may
10 make new logos available to the system with an "add" button which uploads the logo file,
11 and may likewise permit logos to be removed from the system with a "remove" button.
12 The system may display a list of websites via a listbox containing the sites and a site
13 details edit area. Upon selection of a website in the list, the system may populate the site
14 details section. The system may permit the URL, description, and type of website to be
15 edited. The system may provide a delete button for removing a site from the list. The
16 system may provide a save button to save the current website. The system may provide a
17 new site button for emptying the edit area to allow a new site to be entered and saved.
18 The system may provide selectable links for accessing the biller's enrollment page and
19 biller profile page. The system may be adapted to store logo and website data as global
20 information on the database.

21 As described above with respect to users associated with payers, the system may
22 provide a user list box, which the system may populate with the selected biller system's
23 user names, and the system may provide an "edit users" option for directing the user to an

1 “edit users” page, where the system may allow the administrator to add, modify, or delete
2 users associated with the current biller.

3 The system may permit the administrator to add a new user to the current biller by
4 entering information into the user information section. The system may require that the
5 combination of last name, middle initial and first name be unique. The system may
6 permit modify and delete operations to be performed on the currently selected user. The
7 system may provide a checkbox for temporarily deactivating a user. The system may be
8 adapted to store contact information as global information on the database, including,
9 e.g., last name, first, middle, phone, fax, e-mail, e-mail2, user ID, password,
10 confirmation, language, currency and privilege group. The system may require certain
11 fields for user information, including last name, first name, e-mail and phone. The system
12 may provide a reset password button for resetting the selected user’s password to the
13 default setting. The system may be adapted to automatically send an e-mail to a new user
14 after they have been added, telling the user that they have 24 hours to log in and change
15 their password or the account will be disabled (e.g. where the password is set to the
16 default of user’s last name; accounts may be re-enabled by a host user). The e-mail may
17 inform them of how to connect and logon to the system.

18 The system may permit a host user to select a “relationships” option 512 for being
19 redirected to a relationships page 513 for viewing, modifying and/or establishing
20 biller/payer relationships. This page may contain a list of current billers in the billers list
21 box and two payer list boxes: available payer and related payer. When a user selects a
22 biller from the list box, the system may update the two payer list boxes. The available
23 payer list box may contain all payers not currently related to the selected biller that have

1 been approved by the biller. The related payer list box may contain all payers currently
 2 related to the selected biller. The system may provide “add” and “remove” buttons to
 3 allow payers to be added or removed from the related payers list. The system may
 4 display in a Payer ID# field the system-wide biller-customer number for the selected
 5 payer from either list. The system may not save this page unless all related payers have
 6 Payer ID#'s and may display a warning message may inform the user of this condition.
 7 The system may be adapted to store payer/biller relationship data as global information
 8 on the database.

9 The system may permit the host user to select an option to add/modify/delete
 10 administrators associated with the host. The system may permit the administrator to add a
 11 new user to the channel host by entering information into a user information section and
 12 selecting “add”. The system may require that the combination of last name, middle initial
 13 and first name be unique. The system may permit modify and delete operations to be
 14 performed on the currently selected user. The system may provide a checkbox for
 15 temporarily deactivating a user. The system may be adapted to store contact information
 16 as global information on the database, including, e.g., last name, first, middle, phone, fax,
 17 e-mail, e-mail2, user ID, password, confirmation, language and privilege group. The
 18 system may require certain fields for user information, such as last name, first name, e-
 19 mail and phone. The system may provide a reset password button for resetting the
 20 selected user’s password to the default setting. The system may be adapted to
 21 automatically send an e-mail to a new user after they have been added, informing them of
 22 how to connect and logon to the system.

1 The system may permit a host user to select an option 514 to change security
2 information, in which case the system may permit administrator, biller and payer security
3 settings to be modified at one or more user security/privilege pages 515. In the various
4 privilege pages, the system may permit the privilege group to be entered and presented in
5 the local language. The system may present the list of functional access permissions in
6 the language of the active user.

7 For changing privilege information relating to host administrators, the system may permit
8 administrator privilege groups to be defined and edited. The system may display a list of
9 available permissions, the permissions being inherited from the active user currently
10 logged on. The system may provide a listbox containing all defined administrator
11 privilege groups, wherein selecting a previously defined group may cause the system to
12 populate the list with the corresponding settings. The system may provide an "all" button
13 for setting all permissions when selected, and a "none" button for clearing all permissions
14 when selected. The system may permit add, modify and delete operations to be
15 performed on the current privilege group. The following list may be representative of
16 exemplary permissions that may be set for host administrators: create new billing entities;
17 create/maintain new biller system administrators; activate new biller system
18 administrators; create new paying entities; create/maintain new payer system
19 administrators; activate new payer system administrators; create/maintain new host
20 administrators; maintain biller-payer relationships; reset biller/payer system administrator
21 user passwords; maintain adjustment codes; edit mailing lists; and run canned reports.

22 For changing privilege information relating to billers, the system may permit
23 biller permissions to be defined and edited. The system may display a list of available

1 permissions, the permissions being inherited from the active user currently logged on.
2 The system may provide a listbox containing all defined biller privilege groups, wherein
3 selecting a previously defined group may cause the system to populate the list with the
4 corresponding settings. The system may provide an "all" button for setting all
5 permissions when selected, and a "none" button for clearing all permissions when
6 selected. The system may permit add, modify and delete operations to be performed on
7 the current privilege group. The following list may be representative of exemplary
8 permissions that may be set: create/maintain new biller system users; activate biller
9 system users; create/maintain new biller system administrator users; reset user passwords;
10 maintain adjustment codes; edit biller bank holidays; edit biller/payer agreements; edit
11 mailing lists; and run canned reports.

12 For changing privilege information relating to payer system users, the system may
13 permit payer permissions to be defined and edited. A list of available permissions may
14 be displayed, the permissions being inherited from the active user currently logged on.
15 The system may display a listbox containing all defined payer privilege groups, wherein
16 selecting a previously defined group may cause the system to populate the list with the
17 corresponding settings. The system may provide an "all" button for setting all
18 permissions when selected, and a "none" button for clearing all permissions when
19 selected. The system may permit add, modify and delete operations to be performed on
20 the current privilege group. The following list may be representative of exemplary
21 permissions that may be set: create/maintain new payer system users; activate new payer
22 system users; create/maintain new payer system administrators; reset user passwords;
23 maintain adjustment codes; edit payer bank holidays; edit biller/payer agreements; edit

1 mailing lists; and run canned reports. The system may be adapted to store any of the
2 foregoing permission data as global information on the database.

3 The system may permit a host user to select a "load invoices" option 516 for
4 being redirected to a page 517 for performing a manual load of selected invoice files or
5 controlling the automatic loading times of biller uploads. The load invoice page 517 may
6 contain a list of current billers in a billers list box. When an administrator selects a biller,
7 the system may use files found in the directory or subdirectories used for invoice loading
8 associated with the selected biller to populate the invoice files list box. The system may
9 permit the host user to select one or more files from the invoice files list box and select an
10 option for loading them at that time, which may force the system to load the selected
11 invoice files immediately. After the process is complete, the system may display any
12 error information that occurred during processing may on this page. The system may
13 handle the automatic loading of invoices through a scheduling interface.

14 The system may permit a host user to select a "host profile" option 505, which
15 may direct the user to a host profile page 506 for allowing the host's profile information
16 and payment method information to be edited. The system may allow data to be entered
17 for the following exemplary fields, which the system may be adapted to store as global
18 information on the database: name, address, city, state, zip, country, phone, number, fax
19 number, and maximum invoice amount allowed. The system may use the maximum
20 invoice amount allowed field to establish a threshold for a maximum payment for a single
21 invoice. The system may permit invoice values that exceed this amount to be loaded
22 into the system but not to be paid through the system. The system may also permit
23 payment method information to be modified at this page, i.e. the system may permit the

1 administrator to define the payment methods that the host has currently enabled. The
2 system may display a payment methods area consisting of two listboxes, an available
3 methods box containing all the payment methods that are currently unassigned by the
4 host, and an enabled methods box containing all the methods the host has enabled. The
5 system may provide two buttons to allow methods to be transferred from box to box. The
6 system may provide save and cancel buttons at the payment methods area. Exemplary
7 available payment methods may include ACH debit, credit card/procurement card, and
8 paper check.

9 The system may permit the host user to select a reports option 504, which may
10 cause the system to display subcategories that correspond to the available reports.
11 Exemplary reports the system may generate may include: access report 521; invoice load
12 and error reports 522; invoice payment reports 523; bottomline payment reports 524;
13 analyze RDBMS (Relational Database Management System) 525; review performance
14 statistics 526; and activity report 527. Activity report 527 may cause the system to detail
15 the following exemplary activities: create new biller/payer; create new contacts;
16 add/remove biller-payer relationships; edit biller bank holidays; edit biller/payer profiles;
17 reset biller/payer system administrator passwords; add/edit adjustment codes; edit
18 mailing lists; edit contact info; create new logins for contacts; edit login info;
19 disable/enable logins; and help desk login. The system may permit the user to select
20 from among various reporting options and/or filters 528 (which the system may be
21 adapted to store as global information on the database), and the system may then generate
22 a report and permit the user to view and/or print it at a report page 529.

1 Other functionality which the system may provide for the host user includes a
2 password change selection 530, which may cause the system to direct the user to a
3 password change routine 531; a help selection 533, which may cause the system to direct
4 the user to a help routine 534; and a logout routine 550.

5

6 **Biller System Workflow**

7 Figure 6 illustrates an exemplary biller system workflow in one embodiment of
8 the system. When a user logs in 601 to the system using the user ID of a biller, the
9 system may display a biller system administration or “welcome” page 602. The system
10 may display the user's name at the top in the form of a "Welcome 'Username'" message,
11 for personalization. The system may display at a biller system administration page key
12 biller statistics and a list of “action items” with current counts, amounts in local currency
13 and links to the corresponding pages, as well as information about the basic functionality
14 of the main topics. The system may also display at this page information provided by the
15 administrative user regarding how to contact the administrative user. The current counts
16 may include total invoices, closed invoices, paid invoices, unpaid invoices, and adjusted
17 invoices. The system may provide a selection to the user for filtering and/or sorting the
18 counts. The system may permit the biller system user to return to this page by clicking
19 on a link that may be present on every page during system access. One area of the screen
20 may contain navigation buttons grouped into categories, e.g., administration 603
21 (discussed further hereinbelow at “Biller System Administration”), invoices/payments
22 680, and reports 604. The system may expand these categories into subcategories that
23 modify another portion of the screen. One area of the navigation frame may contain the

1 user name (not the user ID) who is logged on. The system may allow the user to click on
 2 this link to modify his or her basic profile information. The system may provide
 3 other functionality, including a “help” button 650 for directing the user to a help section
 4 651 and a “logout” button 652 for logging the current user out of the system.

5 The system may allow the biller system user to select an option to edit the active
 6 user profile, wherein the system may direct the biller system user to a page displaying the
 7 organization name of the biller at the top, to establish the context of the current edit. The
 8 system may permit information to be maintained and edited at this page and may store
 9 the information as global information on the database, e.g., last name, first, middle,
 10 phone, fax, e-mail, e-mail2, password and confirmation. The system may require certain
 11 fields for user information, including last name, first name, e-mail and phone. The system
 12 may include this information in e-mails which may be sent through the system and may
 13 also make this information available to biller and payer system administrators.

14 The system may permit a biller system user to select an option 605 to display
 15 invoices based on selected criteria and/or specify general search criteria for listing
 16 invoices. Depending on the selection, the system may direct the user to a “view options”
 17 page 606 for filtering and sorting. The system may provide a view options page 606 to
 18 allow the user control over the subset of data that will be displayed and the order in
 19 which the data will be presented. To further facilitate the presentation of invoices, the
 20 system may permit settings associated with a specific report to be automatically saved
 21 and used again the next time the user generates the report. Considering the time it may
 22 take to generate certain reports (e.g. lengthy reports), the system may also provide an
 23 option to bring this page up before running a report, to limit the scope and time. The

20 The system may allow a biller system user to select an option to display a page
21 607 for listing invoices matching specified criteria. The system may display at this screen
22 the filter/sort criteria that are in use for this display. The system may display invoices
23 using a paging concept (i.e. 1 – 20 of 362). When displaying invoices, the system may

1 remove any existing navigation area, so as to optimize the invoice display area. In one
2 embodiment, the system may display a page separated into two sections, with the header
3 section containing non-scrolling data and/or buttons and the body section that scrolls as
4 necessary, depending upon the width of the browser window and the number of invoices
5 being displayed. The header section may contain the following elements:

- 6 • The user's selection criteria, i.e., All Invoices – Past due.
- 7 • The display range text in the format of first – last of maximum, i.e., 1-20 of 200.
- 8 • "Next 'n'" may cause the system to navigate the user to the next "n" invoices, i.e.,
9 "Next 20". If the last "n" invoices are currently being displayed the system may
10 disable the "Next" button.
- 11 • "Previous 'n'" may cause the system to navigate the user to the previous "n" invoices,
12 i.e., "Previous 20". If the first "n" invoices are currently being displayed the system
13 may disable the "Previous" button.
- 14 • "All" may cause the system to change the mode from displaying a page of invoices to
15 displaying all invoices, and the system may label the button "Page", i.e., 1-200 of
16 200. If the "Page" button is selected, the system may display at this page the first "n"
17 invoices, and system may label the button "All".
- 18 • "Back" may cause the system to return to the previous screen, step, or function.
- 19 • "Search" may cause the system to perform a search in the current invoice list by using
20 the "Find" feature. The system may permit only the invoices currently being
21 displayed to be searched. The system may allow the user to type a string to search for
22 before selecting the "Search" button. The system may search each invoice may for the
23 specified string. If a match is found, the system may scroll the invoice record into

- 1 view and select the text found. Selecting "Search" again may cause the system to find
2 the next instance of the string. The system may permit wildcard searches.
- 3 • "Show Selected" may cause the system to display all invoices that have been
4 manually checked. In the last column of the invoice list, the system may allow a user
5 to select individual invoices. While the user remains on this page, the system may
6 maintain in a list all invoices that are marked as selected. If the user switches the
7 context of this view, the system may not remove any selection made by the user.
8 Clicking on the "Show Selected" button may cause the system to display all the
9 invoices the user has selected. The system may change this button to either "Page" or
10 "All", depending on the state of the selection when this button was pressed. Selecting
11 this button again may cause the system to return the invoice list to its previous mode.
12 The system may display all selected invoices, even if they exceed the page limit.
 - 13 • "Close" 608 may cause the system to mark as closed all invoices that are selected.
14 The system may display to the user a confirmation message before the invoices are
15 closed, e.g., "You have selected 24 invoices to close. Are you sure you want to close
16 these invoices?" The system may not permit closed invoices to appear in any active
17 queries. The system may subject invoices that are marked as closed to host archiving
18 and purging criteria.
 - 19 • "Paid Through Another Source" may be provided by the system as an option for the
20 biller system user to mark an invoice as closed by selecting desired invoices and
21 clicking on the "Paid through another source" button. Once this occurs, the system
22 may, for the invoices in question, update their audit trail to reflect that they were paid
23 outside the system, and then change their status to "Closed".

1 In the body section, the system may display all invoices in table format. The width of the
2 table columns may be proportional to the width of the browser window. If the browser
3 window is narrowed, the system may decrease column widths appropriately and wrap
4 text within each column, as necessary. If an invoice has adjustments, the system may
5 highlight that line in color to indicate this fact. The system may link the invoice number
6 field to the invoice detail page. The system may link the status field to the invoice history
7 page, at which the system may display a full status history for the selected invoice. By
8 default, the system may display the following exemplary columns: payer name, invoice
9 number, due date, status, net amount due, amount to pay, P.O. number, P.O. requisition
10 number, store number, and select.

11 The system may permit the biller system user to select an option to display the
12 details of a selected invoice, which may cause the system to direct the user to an invoice
13 detail section 610. The system may use one or more predetermined, customizable and/or
14 selectable template schema (which may be stored as global information on the database)
15 to format the biller detail, and the system may provide a single biller multiple templates
16 from which to select. The invoice detail page may contain various sections. One section
17 may display summary information for the selected invoice, information about the biller,
18 information about the particular invoice, and/or information about the payer. The system
19 may provide selectable buttons for obtaining more information about the current invoice,
20 e.g., items 611, messages 612, e-mail 613, status 614, shipping info 615, discounts 616,
21 and notes 617. The system may display line items that have been adjusted in a different
22 color. Upon selection by a user of the items button 611, the system may toggle the
23 header view from showing a detailed header description to allowing the user to perform

1 basic search operations on the details of this invoice. The items button 611 may cause the
 2 system to toggle to header. Clicking on the header button may cause the system to return
 3 to the previous view, thereby providing more space for viewing details on the current
 4 page, as follows. Another section may contain the line items that make up the invoice.
 5 The system may color code highlight line items that have been adjusted. Each line may
 6 have a clickable line number. Clicking a line item's number may cause the system to
 7 expand the line to show its detail. Clicking a particular adjustment may cause the system
 8 to display a window with details about that specific adjustment. Another section may
 9 contain the invoice summary. For both the original amount billed and the amount to pay,
 10 the system may calculate and display the following: gross total invoice; time conditional
 11 discount; other discount / charge; a general adjustments link displays the general
 12 adjustment that was entered for this invoice (the system may only present this link if this
 13 invoice has a general adjustment; the system may show each general adjustment
 14 separately; and the system may permit general adjustments to be removed); sales tax;
 15 other tax; and net amount due.

16 The system may, upon selection of the messages button 612, display a new
 17 browser window 622 allowing the biller system user to enter a new message for the payer
 18 associated with the current invoice. The system may permit new messages to be entered
 19 into a textbox and sent by pressing a "save" button. The system may provide a "cancel"
 20 button for discarding the current message and returning to the invoice detail page. The
 21 system may provide a discounts button 616 for opening a separate browser window 626
 22 displaying discounts information for the current invoice, including, e.g., time conditional
 23 discount %; time conditional discount amount; time conditional discount date; invoice

1 items of information: adjustment amount, reason code, and notes. The system may
2 permit a quantity adjustment button 619 to be selected for a specific invoice line item to
3 open a separate browser window 629 containing quantity adjustment information for that
4 line item. This information may be read only and may include the following exemplary
5 items of information: adjustment quantity, reason code, and notes. The system may
6 permit a price adjustment button 620 to be selected for a specific invoice line item to
7 open a separate browser window containing price adjustment information for that line
8 item. This information may be read only and may include the following exemplary items
9 of information: new price, reason code, and notes. The system may permit an allowance
10 button 621 to be selected for a specific invoice line item to open a separate browser
11 window 631 containing allowance information for that line item. This information may
12 be read only and may include the following exemplary items of information: allowance
13 amount, reason code, and notes.

14 The system may make other options available to the biller system user for
15 selection, e.g. an items button for displaying the invoice details in item view. The system
16 may, upon selection of such an button, remove the header from the invoice details and all
17 but the net amount due field of the footer, thereby allowing more screen space to be used
18 for the presentation of invoices. The system may provide a search function for
19 performing a search in the current invoice list. The system may permit only the invoices
20 currently being displayed to be searched. The system may allow the user to type a string
21 to search for before selecting the "Search" button. The system may search each invoice
22 may for the specified string. If a match is found, the system may scroll the invoice record
23 into view and select the text found. Selecting "Search" again may cause the system to

1 find the next instance of the string. The system may permit wildcard searches. The
 2 system may provide clickable line numbers in the items view line, whereby upon clicking
 3 a line item's number, the system may expand the line to show its invoices, and clicking a
 4 particular adjustment may cause the system to bring up a window with details about that
 5 specific adjustment.

6 The system may permit the biller system user to select an option 608 to retrieve
 7 all closed invoices in the system subject to the criteria set in the view options page and
 8 may provide the additional option of restoring selected invoices that have been closed
 9 into the current collection. The system may move invoices that have been checked to the
 10 open state when the user selects an "open" button.

11 The system may permit the biller system user to select an option 632 to export
 12 files, i.e. to download data directly from the server, bypassing the need to have the data
 13 flow through a transmission to the biller system user. Selecting the export files option
 14 632 may cause the system to direct the user to the invoice export section 633, from which
 15 the user may either edit export templates or export files. Upon selection of edit export
 16 templates, the system may allow the biller system user to edit the templates used in file
 17 export. An export templates listbox may show the present export templates while a
 18 template settings area may contain all the attributes and settings of the current selected
 19 template. Upon selection of a template from the export templates listbox, the system may
 20 populate the fields of the template settings area. In this area, the system may allow the
 21 biller system user to add, modify, or delete file export templates by using a set of buttons
 22 or controls. The set of invoices to be exported may be based on the invoices that are
 23 being viewed at the time export is chosen. The system may permit the user to set that

1 filter through the filter/sort page. The template settings area may contain the following
2 exemplary controls (which the system may be adapted to store as global information on
3 the database): fields and export order (may contain a listbox of the available invoice
4 fields and an ordered listbox of fields marked for export with two buttons for moving
5 fields between listboxes; up and down buttons may allow the field export order to be
6 changed); and file formats (a listbox that allows the file format to be selected; if ASCII is
7 chosen a delimiter section may be displayed and the user may need to select field and
8 record delimiters). The system may provide a "set default" button for allowing the user
9 to set the current template as the default template for the file export page. Upon selecting
10 file export, the system may allow the biller system user to export invoices based on an
11 export template. In the templates listbox, the system may show the present export
12 templates while the export range may allow the user to select the date range criteria for
13 including invoices in the export. In the templates list, the system may default to the
14 template set as default from the edit export templates page; if no default template was set,
15 the system may select the first entry in the listbox. An "export" button may cause the
16 system to perform the file export, while a "cancel" button may cause the system to abort.
17 The system may be adapted to export files in such exemplary formats as 810 for invoices,
18 820 for payments, XML, delimited files, and fixed-length PayBaseTM compatible files.

19 The system may permit the biller system user to select a reports option 604, which
20 may cause the system to display subcategories that correspond to the available reports.
21 Exemplary reports may include: paid invoices 641, total invoices 642, adjusted invoices
22 643, pending invoices 644, closed invoices 645, credit notes 646, and statistics 647.
23 Other exemplary reports may include cashflow forecasting, aged outstanding invoice,

1 returned items, modified invoice history, biller profile maintenance, payment history, and
2 outstanding invoice status. The system may permit the user to select from among various
3 reporting options and/or filters 648 (which the system may be adapted to store as global
4 information on the database), and the system may then generate a report 649 for viewing
5 and/or printing.

6 **Biller System Administration Workflow**

7 Figure 7 illustrates an exemplary biller system administration workflow in one
8 embodiment of the system. From the administration 700 screen, the system may permit a
9 biller system administrator to select from among functions including, e.g., edit biller
10 profile 701, archive/purge 710, edit banks 702, edit users 703, edit event e-mails 704, edit
11 payers 705, adjustments 706, edit export template 733, and password/profile change 735.

12 Upon selection by the biller system administrator of the edit biller profile 701
13 function, the system may redirect the biller system administrator to a biller profile section
14 707 for editing the biller's profile information. The system may permit company data to
15 be entered and/or edited for the following exemplary fields (which the system may be
16 adapted to store as global information on the database): name, address, city, state, zip,
17 country, SIC code, TIN, and default template type. From the biller profile section 707,
18 the system may permit the biller system administrator to select a function for editing
19 logos and websites, which may cause the system to direct the administrator to a logo and
20 website editing page 708, wherein the administrator may edit the biller's logos and
21 available websites (which the system may be adapted to store as global information on
22 the database). The system may display a list of billers, and the selection of a biller from
23 the list may cause the system to populate the company information area with details about

1 the current biller. For each biller, the system may permit a list of company logos and
 2 websites to be edited. The system may permit new logos to be made available to the
 3 system with an “add” button for uploading the logo file, and the system may likewise
 4 permit logos to be removed from the system with a “remove” button. The system may
 5 display a list of websites via a listbox containing the sites and a site details edit area.
 6 Selecting a website in the list may cause the system to populate the site details section.
 7 The system may permit the URL, description, and type of website to be edited. The
 8 system may provide a delete button for removing a site from the list and a save button for
 9 saving the current website. The system may provide a new site button for emptying the
 10 edit area to allow a new site to be entered and saved. The system may provide selectable
 11 links for accessing the biller’s enrollment page and biller profile page. The system may
 12 permit the administrator to select a template editing function, which may cause the
 13 system to direct the user to a template editing section 709. In the template editing section,
 14 the system may permit one or more predetermined, customizable and/or selectable
 15 template schema (which the system may be adapted to store as global information on the
 16 database) to be established and/or edited to format the biller detail, and the system may
 17 provide a single biller multiple templates from which to select.

18 The system may permit the administrator to select an archive/purge 710 function,
 19 wherein the system may direct the administrator to an archive/purge section 711. In this
 20 section, the system may permit the administrator to select functions for archiving (which
 21 the system may be adapted to store as global information on the database), including
 22 archiving data to a separate table, modifying options controlling when archiving is to
 23 occur (e.g. if an invoice stays in the “Presented” or “Viewed” state for more than X days;

1 if an invoice stays in the “Paid” state for more than X days; and/or when an invoice is
2 closed, it may be automatically archived); and reporting against archived data. The
3 system may provide purging features (which the system may be adapted to store as global
4 information on the database), including purging records only from the archive table(s);
5 modifying options controlling when to purge (e.g. purge records after X days in archive;
6 or manual purge).

7 Upon selection by the biller system administrator of the edit banks 702 function,
8 the system may redirect the biller system administrator to a biller bank editing section
9 712 for allowing the bank information associated with the biller to be edited. It is
10 contemplated that a biller may have multiple banks with each bank having multiple bank
11 accounts. An exemplary edit banks 712 section may be separated into two sections. In
12 the first section, the system may display the following exemplary fields (which the
13 system may be adapted to store as global information on the database): name, address,
14 city, state, zip code, country, country#, account # and RTN. The system may utilize a
15 MOD9 or similar algorithm to verify valid routing numbers. In a second section, the
16 system may display for the selected bank a “holidays” list-box populated with all bank
17 holidays associated with this bank. Selecting an existing bank holiday from this list box
18 may cause the system to delete the entry. Selecting a delete button may cause the system
19 to delete the selected bank holiday. The system may provide combo-boxes for month, day
20 and year selection. Selecting an add button may cause the system to add the selected date
21 to the holiday list-box. If a bank is added with, or is caused to have no holidays through
22 later modification, the system may display a warning to the user.

1 The system may permit the administrator to select a “users” 703 function, wherein
2 the system may direct the administrator to an edit user section 713. In this section, the
3 system may permit the administrator to add, modify or delete users associated with the
4 current biller. At this page, the system may display the name of the biller at the top to
5 establish the context of the edit. The system may populate a list box with the selected
6 biller system’s user names. As the administrator clicks on each user, the system may
7 display the user’s information in a user information section. The system may permit the
8 administrator to add a new user to the current biller by entering information into the user
9 information section. The system may require that the combination of last name, middle
10 initial and first name be unique. The system may permit modify and delete operations to
11 be performed on the currently selected user. The system may provide a checkbox for
12 temporarily deactivating a user. The system may maintain contact information (which
13 the system may be adapted to store as global information on the database), including,
14 e.g., last name, first, middle, phone, fax, e-mail, e-mail2, user ID, password,
15 confirmation, language and privilege group. The system may require certain fields for
16 user information, such as last name, first name, e-mail and phone. The system may
17 provide a reset password button for resetting the selected user’s password to the default
18 setting. The system may automatically send an e-mail to a new user after they have been
19 added, telling the user how to connect and logon to the system. As described above with
20 reference to the host user modifying privilege information, the system may similarly
21 permit a biller system administrator to access a permissions section 715 for modifying
22 permission/privilege information (which the system may be adapted to store as global
23 information on the database).

1 Upon selection by the biller system administrator of the event e-mails 704
2 function, the system may direct the biller system administrator to an event e-mail section
3 714. In this section, the system may permit biller system users to be associated with
4 specific system events, which associations the system may be adapted to store as global
5 information on the database. Any time one of these specific events occurs, the system
6 may generate an automatic e-mail and send it to the selected list of biller system users.
7 For example, exemplary distribution list choices may include: invoices loaded
8 successfully, invoices loaded unsuccessfully, invoice adjusted, payment authorized,
9 payment canceled, payment completed, and payment notification. The system may
10 display on this page a list-box that contains all biller system users currently in the
11 selected distribution list and a list-box that contains all biller system users currently not in
12 the selected distribution list. In one embodiment, the system may provide two buttons to
13 allow users to be added or removed from the distribution list. The system may permit a
14 default e-mail address to be set up for each event, e.g. the biller system administrator.
15 The system may permit the user to remove this value and/or add to the list. The system
16 may send an automatic e-mail to one or more biller system users when a payment is
17 made. The system may send a summary of the payments made to each biller that has
18 payments in the given payment run. The system may send to designated biller system
19 users an e-mail with the following exemplary information: summary of payments made
20 on today's date, payer name; payer number; total number of payments; and total amount
21 of payments.

22 The system may further direct the biller system administrator, upon selection of
23 the payers feature 705, to selections for performing tasks including options 716,

1 through the adjustments listbox, may enable the actual selection of adjustments available
2 to the payer system users. The system may make all adjustments selected be available as
3 long as the enable disputes checkbox is checked. The system may also provide a
4 checkbox for e-mailing one or more biller system users on adjustments. If this option is
5 selected, the system may enable a mailing list button for sending automatic e-mails. The
6 system may send to designated biller system users an e-mail for each adjustment made
7 with the following exemplary information: "the following adjustment was made by payer
8 name on today's date"; payer number; invoice number; adjustment type; adjustment
9 amount; and adjustment reason. If there is no address set up to receive this e-mail, the
10 system may send an e-mail message by default to the biller system administrator. The
11 system may permit a mailing list function 722 may be accessed by the biller system
12 administrator for modifying mailing list settings (which may be stored as global
13 information on the database). The system may provide a close invoice function 718 for
14 directing the biller system administrator to a close invoice section 723 to establish
15 invoice-closing criteria for each payer. The system may only permit invoices with the
16 status of "paid", "presented", or "viewed" to be closed. All other invoice states may
17 indicate payer workflow is in progress, and the system may not permit invoices having
18 such states to be closed. At the payer invoice close page 723, the system may display a
19 list-box with all the payers related to the biller, with the system pre-selecting the most
20 recently selected payer in this session by default. If no payer has previously been
21 selected, then the system may not pre-select a payer from the list-box. For the selected
22 payer, the system may present invoice closing criteria. The system may process criteria
23 entered during the next nightly sweep. The system may mark as closed invoices that meet

1 the closing criteria. Selecting the e-mail 719 task may cause the system to direct the
2 biller system administrator to a payer e-mail 724 section for associating a list of biller
3 system users with a specific payer (which associations the system may be adapted to store
4 as global information on the database). At the payer e-mail page 724, the system may
5 display a list-box with all the payers related to the biller. The system may pre-select the
6 most recently selected payer in this session by default. If no payer has previously been
7 selected, then the system may not pre-select a payer from the list-box. For the selected
8 payer, the system may display a page having a list-box that contains all biller system
9 users currently related to the payer and a list-box that contains all biller system users
10 currently unrelated to the payer. The system may provide two buttons to allow users to be
11 added or removed from the related list.

12 If the biller system administrator selects the adjustments 706 feature, the system
13 may further direct the biller system administrator to selections for performing adjustment
14 tasks including general 725, quantity 726, price 727, and line item allowance 728. When
15 a new biller is created on the channel host, the system may give it a full set of the default
16 adjustments for each of the four types (general, quantity, price, line item allowance).
17 These system may permit these adjustments to be modified, added to, or deleted,
18 allowing full customization by the biller. The system may provide a feature for restoring
19 adjustments to the initial defaults. Selecting the general 725 button may cause the biller
20 system administrator to be directed to a general adjustment codes page 729, wherein the
21 system may permit global general adjustment codes to be edited. At this page 729, the
22 system may display an adjustment list-box and an adjustment information area. The
23 system may permit adjustments to be selected from the list-box to be edited or deleted.

1 The system may permit new adjustments to be added by selecting an add button. The
2 system may make adjustments entered here available to all of the biller's payers in the
3 system. Exemplary associated fields may include: code and description. Selecting the
4 quantity 726 button may cause the system to direct the biller system administrator to a
5 quantity adjustment codes page 730, wherein the system may permit global quantity
6 adjustment codes to be edited. At this page 730, the system may display an adjustment
7 list-box and an adjustment information area. The system may permit adjustments to be
8 selected from the list-box to be edited or deleted. The system may permit new
9 adjustments to be added by selecting an add button. The system may make adjustments
10 entered here available to all of the biller's payers in the system. Exemplary associated
11 fields may include: code, description, threshold amount (which may only be active if
12 "user defined" is not selected), and a "user defined" checkbox. Selecting the price 727
13 button may cause the system to direct the biller system administrator to a price
14 adjustment codes page 731, wherein the system may permit global price adjustment
15 codes to be edited. At this page 731, the system may display an adjustment list-box and
16 an adjustment information area. The system may permit adjustments to be selected from
17 the list-box to be edited or deleted. The system may permit new adjustments to be added
18 by selecting an add button. The system may make adjustments entered here available to
19 all of the biller's payers in the system. Exemplary associated fields may include: code,
20 description, threshold amount (which may only be active if "user defined" is not
21 selected), and a "user defined" checkbox. Selecting the line item allowance button 728
22 may cause the system to direct the biller system administrator to a line item allowance
23 adjustment codes page 732, wherein the system may permit global discount adjustment

1 codes to be edited. At this page 732, the system may display an adjustment list-box and
 2 an adjustment information area. The system may permit adjustments to be selected from
 3 the list-box to be edited or deleted. The system may permit new adjustments to be added
 4 by selecting an add button. The system may make adjustments entered here available to
 5 all of the biller's payers in the system. Exemplary associated fields may include: code,
 6 description, amount (percentage), fixed or scaled, number of days, and a "penalty
 7 assessed" checkbox.

8 The system may permit selection of an edit export templates 733 function for
 9 allowing the biller system administrator to edit the templates used in file export in an edit
 10 export template section 734. The system may display an export templates listbox
 11 showing the present export templates. In the template settings area, the system may
 12 display all the attributes and settings of the current selected template. Selecting a
 13 template from the export templates listbox may cause the system to populate the fields of
 14 the template settings area. In this area, the system may allow the biller system user to
 15 add, modify, or delete file export templates by using a set of buttons or controls. The set
 16 of invoices to be exported may be based on the invoices that are being viewed at the time
 17 export is chosen. The system may permit the user to set that filter through the filter/sort
 18 page. The template settings area may contain the following exemplary controls (which,
 19 the system may be adapted to store as global information on the database): fields and
 20 export order (may contain a listbox of the available invoice fields and an ordered listbox
 21 of fields marked for export with two buttons for moving fields between listboxes; via up
 22 and down buttons, the system may allow the field export order to be changed); and file
 23 formats (a listbox that allows the file format to be selected; if ASCII is chosen a delimiter

1 section may be displayed and the system may require the user to select field and record
2 delimiters). The system may provide a “set default” button for allowing the user to set
3 the current template as the default template for the file export page. By selecting file
4 export, the system may allow the biller system user to export invoices based on an export
5 template. In the templates listbox, the system may show the present export templates,
6 while, in the export range, the system may permit selection of the date range criteria for
7 including invoices in the export. In the templates list, the system may default to the
8 template set as default from the edit export templates page; if no default template was set,
9 the system may pre-select the first entry in the listbox. The system may provide an
10 “export” button for performing the file export and a “cancel” button for aborting.

11 The system may provide a password/profile change button 735 for directing the
12 biller system administrator to a password/profile change section 736 for changing
13 password and/or profile information.

14 **Payer System Workflow**

15 Figure 8 illustrates an exemplary payer system workflow in one embodiment of
16 the system. When a user logs in 801 to the system using the user ID of a payer, the
17 system may display a payer system administration or “welcome” page 802. The system
18 may display the user's name at the top in the form of a "Welcome 'Username'" message,
19 for personalization. The system may display at a payer system administration page key
20 payer statistics and a list of “action items” with current counts, amounts in local currency
21 and links to the corresponding pages, as well as information about the basic functionality
22 of the main topics. The system may also display at this page information provided by the
23 administrative user regarding how to contact the administrative user. The current counts

1 may include invoices due today, invoices due tomorrow, invoices that will lose a discount
2 today, invoices that will lose a discount tomorrow, invoices past due, invoices
3 outstanding with adjustments, total invoices, verified invoices, initiated payments,
4 authorized payments, and pending payments. The system may provide a selection to the
5 user for filtering and/or sorting the counts. The system may display a biller list, which
6 may include all billers that the payer has a relationship with in the system. The system
7 may permit the payer system user to click on any biller to get a list of invoices from that
8 biller. The system may permit the payer system user to return to this page by clicking on
9 a link that may be present on every page during system access. One area of the screen
10 may contain navigation buttons grouped into categories, e.g., invoices due today 803,
11 invoices due tomorrow 804, invoices that will lose a discount today 805, invoices that
12 will lose a discount tomorrow 806, invoices past due 807, outstanding invoices with
13 adjustments 808, total invoices 809, and verified invoices 810, all of which may link to
14 an invoice list page 821 to display the desired invoices. Other navigation buttons may
15 include initiated payments 811 (which may link to the initiate payment page), authorized
16 payments 812 (which may link to the authorize payment page), pending payments 813
17 (which may link to the pending payments page), administration 814 (discussed further
18 hereinbelow at "Payer System Administration"), invoices/payments 815, reports 816, and
19 biller directory 817. The system may expand these categories into subcategories that
20 modify another portion of the screen. One area of the navigation frame may contain the
21 user name (not the user ID) who is logged on. The system may allow the user to click on
22 this link to modify his or her basic profile information. The system may provide other

1 functionality, including a "help" button 818 for directing the user to a help section 819
2 and a "logout" button 820 for logging the current user out of the system.

3 The system may allow the payer system user to select an option to edit the active
4 user profile, wherein the system may direct the payer system user may be directed to a
5 page displaying the organization name of the payer at the top, to establish the context of
6 the current edit. The system may permit information to be maintained and edited at this
7 page and may store the information as global information on the database, e.g., last
8 name, first, middle, phone, fax, e-mail, e-mail2, password and confirmation. The system
9 may require certain fields for user information, including last name, first name, e-mail
10 and phone. The system may include this information in e-mails which may be sent
11 through the system and may also make this information available to biller and payer
12 system administrators.

13 If the payer system user selects invoices due today 803, invoices due tomorrow
14 804, invoices that will lose a discount today 805, invoices that will lose a discount
15 tomorrow 806, invoices past due 807, outstanding invoices with adjustments 808, total
16 invoices 809, or verified invoices 810, the system may direct the payer system user to an
17 invoice list page 821 for displaying invoices which meet the corresponding chosen
18 parameters. At the invoice list page 821, the system may display to the payer system user
19 invoices based on selected criteria and/or allow the payer system user to specify general
20 search criteria for listing invoices. Depending on the selection, the system may direct the
21 user to a "view options" page 822 for filtering and sorting. At the view options page 822,
22 the system may allow the user control over the subset of data that will be displayed and
23 the order in which the data will be presented. To further facilitate the presentation of

1 invoices, the system may automatically save settings associated with a specific report
2 (which may be stored as global information on the database) and allow them to be used
3 again the next time the user generates the report. Considering the time it may take to
4 generate certain reports (e.g. lengthy reports), the system may also provide an option to
5 bring this page up before running a report, to limit the scope and time. The view options
6 page may consist of three exemplary areas: extract, sort and options. In the extract area,
7 the system may provide the following exemplary choices: by date (past due, eligible for
8 discount, due within xxx days); and by status (paid invoices, adjusted invoices, unpaid
9 invoices, paid through another source); and by biller (all biller, specific biller); and by
10 attribute range between xxx and yyy (none, invoice numbers, store / location, purchase
11 orders, purchase request number, invoice issue dates, dollar amount, bill of lading
12 numbers, receiving location zipcodes, invoice aging). The system may also provide the
13 ability to search for invoice number, store or location number, routing number and P.O.
14 number by using wildcards. The system may provide a sort area to allow returned results
15 to be sorted in ascending or descending order according to the following exemplary
16 criteria: due date, invoice number, invoice date, purchase order number, net amount due,
17 store or location number, and invoice aging. In one embodiment, the system may
18 determine sorting criteria and order by a sort order combo box, which may default to
19 ascending, and three sort criteria boxes, the first of which may default to due date, while
20 the rest may default to no sort criteria (spaces). The system may provide an options area
21 with the following exemplary choices: define page size (for displaying invoices in a
22 paging method), remember and use previous settings, and show view options page before

1 presentation. The system may be adapted to store extract, sort, and options data as global
2 information on the database.

3 The system may allow a payer system user to select an option 821 to list invoices
4 matching specified criteria. The system may display at this screen the filter/sort criteria
5 that are in use for this display. The system may display invoices using a paging concept
6 (i.e. 1 – 20 of 362). When displaying invoices, the system may remove any existing
7 navigation area, so as to optimize the invoice display area. In one embodiment, the
8 system may display a page separated into two sections, with the header section containing
9 non-scrolling data and/or buttons and the body section that scrolls as necessary,
10 depending upon the width of the browser window and the number of invoices being
11 displayed. The header section may contain the following elements:

- 12 • The user's selection criteria, i.e., All Invoices – Past due.
- 13 • The display range text in the format of first – last of maximum, i.e., 1-20 of 200.
- 14 • "Next 'n'" may cause the system to navigate the user to the next "n" invoices, i.e.,
15 "Next 20". If the last "n" invoices are currently being displayed the system may
16 disable the "Next" button.
- 17 • "Previous 'n'" may cause the system to navigate the user to the previous "n"
18 invoices, i.e., "Previous 20". If the first "n" invoices are currently being displayed
19 the system may disable the "Previous" button.
- 20 • "All" may cause the system to change the mode from displaying a page of
21 invoices to displaying all invoices and the system may label the button "Page",
22 i.e., 1-200 of 200. If the "Page" button is selected, the system may display at this
23 page the first "n" invoices, and the system may label the button "All".

- 1 • “Back” may cause the system to return to the previous screen, step, or function.
- 2 • “Search” may cause the system to perform a search in the current invoice list by
- 3 using the “Find” feature. The system may permit only the invoices currently being
- 4 displayed to be searched. The system may allow the user to type a string to search
- 5 for before selecting the “Search” button. The system may search each invoice for
- 6 the specified string. If a match is found, the system may scroll the invoice record
- 7 into view and select the text found. Selecting “Search” again may cause the
- 8 system to find the next instance of the string. The system may permit wildcard
- 9 searches.
- 10 • “Show Selected” may cause the system to display all invoices that have been
- 11 manually checked. In the last column of the invoice list, the system may allow a
- 12 user to select individual invoices. While the user remains on this page, the system
- 13 may maintain in a list all invoices that are marked as selected. If the user switches
- 14 the context of this view, the system may not remove any selection made by the
- 15 user. Clicking on the “Show Selected” button may cause the system to display all
- 16 the invoices the user has selected. The system may change this button may change
- 17 to either “Page” or “All”, depending on the state of the selection when this button
- 18 was pressed. Selecting this button again may cause the system to return the
- 19 invoice list to its previous mode. The system may display all Selected invoices,
- 20 even if they exceed the page limit.
- 21 • “Paid Through Another Source” may be provided by the system as an option for
- 22 the payer system user to mark an invoice as closed by selecting desired invoices
- 23 and clicking on the “Paid through another source” button. Once this occurs, the

1 system may, for the invoices in question, update their audit trail to reflect that
2 they were paid outside the system, and then change their status to "Closed".
3 In the body section, the system may display all invoices in table format. The width of the
4 table columns may be proportional to the width of the browser window. If the browser
5 window is narrowed, the system may decrease column widths appropriately and wrap
6 text within each column, as necessary. If an invoice has adjustments, the system may
7 highlight that line in color to indicate this fact. The system may link the invoice number
8 field to the invoice detail page. The system may link the status field to the invoice history
9 page, at which the system may display a full status history for the selected invoice. By
10 default, the system may display the following exemplary columns: biller name (and/or
11 logo(s)), invoice number, due date, status, net amount due, amount to pay, and select. The
12 payer system administrator may optionally elect to display additional columns (e.g., P.O.
13 number, P.O. requisition number, store number) by setting them in the payer profile
14 (which may be stored as global information on the database).

15 The system may permit the payer system user to select an option 823 to display
16 the details of a selected invoice, which may cause the system to direct the user to an
17 invoice detail section 610. The system may use one or more predetermined,
18 customizable and/or selectable template schema to format the payer detail, and the
19 system may provide a single payer multiple templates from which to select. The system
20 may present detail using a selected language associated with the selected payer and/or
21 user (which the system may be adapted to store as global information on the database).
22 The invoice detail page may contain various sections. One section may display summary
23 information for the selected invoice, information about the payer, information about the

1 particular invoice, and/or information about the biller. The system may provide
2 selectable buttons for obtaining more information about the current invoice, e.g., items
3 831, messages 832, e-mail 833, status 834, shipping info 835, discounts 836, and notes
4 837. The system may display line items that have been adjusted in a different color.
5 Upon selection by a user of the items button 831, the system may toggle the header view
6 from showing a detailed header description to allowing the user to perform basic search
7 operations on the details of this invoice. The items button 831 may cause the system to
8 toggle to header. Clicking on the header button may cause the system to return to the
9 previous view, thereby providing more space for viewing details on the current page, as
10 follows. Another section may contain the line items that make up the invoice. The
11 system may color code highlight line items that have been adjusted. Each line may have a
12 clickable line number. Clicking a line item's number may cause the system to expand the
13 line to show its detail. Clicking a particular adjustment may cause the system to display a
14 window with details about that specific adjustment. Another section may contain the
15 invoice summary. For both the original amount billed and the amount to pay, the system
16 may calculate and display the following: gross total invoice; time conditional discount;
17 other discount / charge; a general adjustments link (which may allow the general
18 adjustment for the current invoice to be entered or edited); sales tax; other tax; and net
19 amount due.

20 The system may, upon selection of the messages button 832, display a new
21 browser window 842 displaying any messages defined by the biller system administrator
22 for this payer. Selection of the discounts button 834 may cause the system to open a
23 separate browser window 846 displaying additional discount information for the current

1 839, price adjustment 840, and allowance 841, at the invoice detail 823 section. The
2 system may permit a general adjustment button 838 to be selected to open a separate
3 browser window 848 containing general adjustment information for this invoice. This
4 information may be read only and may include the following exemplary items of
5 information: adjustment amount, reason code, and notes. The system may permit a
6 quantity adjustment button 839 to be selected for a specific invoice line item, which may
7 cause the system to open a separate browser window 849 containing quantity adjustment
8 information for that line item. This information may be read only and may include the
9 following exemplary items of information: adjustment quantity, reason code, and notes.
10 The system may permit a price adjustment button 840 to be selected for a specific invoice
11 line item, which may cause the system to open a separate browser window 850
12 containing price adjustment information for that line item. This information may include
13 the following exemplary items of information: new price, reason code, and notes. The
14 system may permit an allowance button 841 to be selected for a specific invoice line
15 item, which may cause the system to open a separate browser window 851 containing
16 allowance information for that line item. This information may be read only and may
17 include the following exemplary items of information: allowance amount, reason code,
18 and notes.

19 The system may make other options available to the payer system user for
20 selection, e.g. an items button for displaying the invoice details in item view. The system
21 may, upon selection of such a button, remove the header from the invoice details, and all
22 but the net amount due field of the footer, thereby allowing more screen space to be used
23 for the presentation of invoices. The system may provide a search function for

1 performing a search in the current invoice list. The system may permit only the invoices
2 currently being displayed to be searched. The system may allow the user to type a string
3 to search for before selecting the "Search" button. The system may search each invoice
4 may for the specified string. If a match is found, the system may scroll the invoice record
5 into view and select the text found. Selecting "Search" again may cause the system to
6 find the next instance of the string. The system may permit wildcard searches. The
7 system may provide clickable line numbers in the items view line, whereby upon clicking
8 a line item's number, the system may expand the line to show its invoices, and clicking a
9 particular adjustment may cause the system to bring up a window with details about that
10 specific adjustment.

11 The system may provide other selectable options, including a website button for
12 opening a separate browser window containing links to biller-specific websites, and a
13 biller info button for displaying a new browser window containing the biller information
14 supplied for the current payer.

15 From the perspective of the payer system user, the system may identify an invoice
16 as having one of the following exemplary states: presented, viewed (an invoice may be
17 considered "viewed" when a invoice display query is built with the invoice included; the
18 user does not necessarily need to actually see the invoice to have it considered viewed),
19 verified (an invoice that is in this state may be rolled back to viewed given the user has
20 the permission to verify), payment initiated, payment authorized, payment pending (an
21 invoice in this state may be rolled back to verified given the user has the permission to
22 authorize payment), paid, and closed.

1 As illustrated in the payer invoice/payments workflow diagram of Figure 9, if the
2 payer system user selects invoice/payments 815, the system may direct him or her to
3 further select from among invoice/payment selections, which may include, e.g., review
4 invoice 901, initiate payment 902, approve/verify invoice 903, authorize payment 904,
5 pending payment 905, payment history 906, and file export 907.

6 Selecting the review invoices 901 function may cause the system to direct the user
7 to an invoice list 908, with appropriate links to invoice status 909, detail 823, and sorting
8 910 pages. The invoice list 908, status 909, detail 823, and sorting 910 pages may be
9 functionally identical to those described above with reference to Figure 8, at ciphers 821-
10 851.

11 Selecting the approve/verify invoices 903 function may cause the system to direct
12 the user to an approve/verify page 911 containing an invoice list, with appropriate links
13 to invoice status 923, detail 823, and sorting 913 pages. The invoice list, status 923,
14 detail 823, and sorting 913 pages may be functionally identical to those described above
15 with reference to Figure 8, at ciphers 821-851. Via the invoice list shown, the system
16 may permit the payer system user to view all invoices in the system that have not yet
17 been approved for payment, subject to the criteria set in the view options page. The
18 system may provide appropriate functionality to approve an individual invoice, approve a
19 selection of invoices, or approve all invoices in the current extract. For any invoice in the
20 extracted set, the system may permit the user to view the corresponding invoice detail
21 page 823 or the invoice status page 923. Invoices included on this page may indicate one
22 of the following exemplary states: presented, viewed, or adjusted. The system may
23 provide appropriate functionality to confirm approval of an individual invoice or group of

1 invoices. The system may permit further selection of an “approve invoices” or “verify
2 confirm” 914 page to permit the user to confirm the requested action.

3 Selecting the initiate payment 902 function may cause the system to direct the
4 user to an initiate payment page 915 containing an invoice list, with appropriate links to
5 invoice status 909, detail 823, and sorting 910 pages. The invoice list, status 909, detail
6 823, and sorting 910 pages may be functionally identical to those described above with
7 reference to Figure 8, at ciphers 821-851. Via the invoice list shown, the system may
8 permit the payer system user to view all invoices in the system that have been approved
9 for payment, subject to the criteria set in the view options page. The system may provide
10 appropriate functionality to initiate payment for an individual invoice, a selection of
11 invoices, or all invoices in the current extract. For any invoice in the extracted set, the
12 system may also permit the user to view the corresponding invoice detail page 823 or the
13 invoice status page 909. The system may display an “amount to pay” column, the
14 amount shown being net of all applied credits and adjustments. The system may provide
15 appropriate functionality to perform a cancel, which action may cause the system to roll
16 back the status to viewed, detaching any applied credits if necessary. The system may
17 permit the user to toggle between the discount date and the invoice due date. The system
18 may set payment options to the default value established for the current biller / payer
19 relationship. The system may page payments to accurately represent how the payment
20 will be submitted. If the selection contains applied credit notes, the system may render
21 each in a separate payment. The system may further permit the user to select a payment
22 initiation selection page 916 to confirm the requested action, i.e. to confirm payment
23 initiation of selected invoices in the system.

1 Selecting the authorize payment function 904 may cause the system to direct the
2 user to an authorization page 917 containing an invoice list, with appropriate links to
3 invoice status 912, detail 823, and sorting 913 pages. The invoice list, status 912, detail
4 823, and sorting 913 pages may be functionally identical to those described above with
5 reference to Figure 8, at ciphers 821-851. Via the invoice list shown, the system may
6 permit the payer system user to view all invoices in the system that have had payment
7 initiated, subject to the criteria set in the view options page. The system may permit the
8 user to click on any check number to view details for that payment group. The system
9 may further permit the payer system user to select check boxes next to payments to select
10 those payments, and to click on an "authorize" button to authorize those selected
11 payments. The system may further permit the user to click on an "authorize all" button to
12 authorize all payments listed. The payment method may be the payment option selected
13 for this transaction, and the initiator may be the user name of the user who authorized the
14 payment. The system may permit the authorize stage to be automatically bypassed if the
15 payment amount is less than a pre-selected threshold amount. The system may further
16 permit the user to select an authorize payment confirmation page 919 to confirm the
17 requested action, i.e. to confirm payment authorization of selected invoices in the system.

18 Selecting the pending payments 905 function may cause the system to direct the
19 user to a pending payment page 918 containing an invoice list, with appropriate links to
20 invoice status 912, detail 823, and sorting 913 pages. The invoice list, status 912, detail
21 823, and sorting 913 pages may be functionally identical to those described above with
22 reference to Figure 8, at ciphers 821-851. Via the invoice list shown, the system may
23 permit the payer system user to view all pending payments in the system subject to the

1 criteria set in the view options page. The system may permit the user to click on any
2 check number to view details for that payment group. The system may further permit the
3 payer system user to select check boxes next to payments to select those payments, and to
4 click on a "cancel" button to cancel the selected payments. The system may further
5 permit the user to click on "cancel all payments" to cancel all payments listed. Canceling
6 a pending payment may cause the system to roll the transaction back to the "verified"
7 invoice state. The system may further permit the user to select a cancellation
8 confirmation page 920 to confirm the requested action, i.e. to confirm canceling pending
9 payments for selected invoices in the system.

10 Selecting the payment history 906 function may cause the system to direct the
11 user to a payment history page 921, wherein the user may view all paid invoices in the
12 system, referencing the corresponding check number, subject to the criteria set in the
13 view options page. The system may provide an invoice history page 922, whereby the
14 system may display an invoice history line for each invoice that meets the view options
15 criteria. Selecting an invoice number link may cause the system to display the
16 corresponding invoice detail page (e.g., as shown and described with respect to cipher
17 823 of Figure 8). The system may provide an invoice status link for displaying a
18 corresponding invoice status page (e.g. as shown and described with respect to cipher 844
19 of Figure 8).

20 The system may permit the payer system user to select an export files function
21 907, i.e., to download data directly from the server, bypassing the need to have the data
22 flow through a transmission to the payer system user. Selecting the export files option
23 907 may cause the system to direct the user to the invoice export section 923, from which

1 range may allow the user to select the date range criteria for including invoices in the
2 export. The system may provide a "today" checkbox, for aiding in setting the to
3 bounding date to the current date. An "export" button may cause the system to perform
4 the file export, while a "cancel" button may cause the system to abort.

5 It is noted that the system may further permit a payer system user not only to view
6 adjusted invoices from the invoice detail screen (e.g. Figure 823, as shown in Figure 8
7 and described above), but also to make adjustments to an invoice. In this scenario, from
8 a user interface perspective, the system may allow the original amount to remain, but may
9 change the "amount to pay" to "amount to adjust". At the bottom of the invoice, the
10 system may add a new line that reflects the unapproved amount to pay, subject to any
11 required approval. The system may also allow credit and debit notes to be entered by a
12 payer system user, whereby credit notes may be entered by a user and/or handled by the
13 system as invoices with a negative dollar amount, and debit notes entered by a user
14 and/or handled by the system as invoices. Thus, the system may permit credit requests to
15 be entered in the same manner as adjustments are entered. If a credit request is issued,
16 the system may send an e-mail to the distribution list for this event, referencing the
17 invoice in question (i.e. invoice number, date, paying company, etc.), amount of credit
18 requested, type of adjustment, adjustment code, and description of need for credit. After
19 an invoice load, the system may execute a process that sets negative dollar invoices to a
20 "verified" status, so that they will appear on the "initiate payment" list. The system may
21 not roll back invoices with a "verified" status and a negative dollar amount to "presented"
22 or "viewed" status. The system may make a report available to certain users listing all
23 outstanding credit notes, including quantity and total dollar amount.

1 As shown in the workflow diagrams of Figures 8 and 10, the system may permit
 2 the payer system user to select a reports option 816, which may cause the system to
 3 display subcategories that correspond to the available reports for selection. Exemplary
 4 reports may include: cashflow forecasting 1001, payment history 1002, security
 5 administrator statistics 1003, payer profile 1004, invoice summary 1005, discount 1006,
 6 returned items 1007, outstanding invoice statistics 1008, and modified invoice summary
 7 1009. The system may permit the user to select from among various reporting options
 8 and/or filters 1010 (which the system may be adapted to store as global information on
 9 the database), and the system may then generate a report for viewing and/or printing at a
 10 report page 1011.

11 As shown in the workflow diagram of Figure 8, the system may permit a payer
 12 system user to select a biller directory option for displaying a screen containing options
 13 which, when selected, cause the system to direct the user to pages for viewing biller
 14 websites and/or e-mail addresses 860 and a biller directory 861 (i.e. a list of available
 15 billers in the system). From the biller directory 861, clicking on a biller's company name
 16 may cause the system to bring the user to a URL set by the biller system administrator.

17 **Payer System Administration Workflow**

18 Figure 11 illustrates an exemplary payer system administration workflow in one
 19 embodiment of the system. From the administration 1100 screen, the system may permit
 20 a payer system administrator to select from among functions including, e.g., edit payer
 21 profile 1101, edit banks 1102, edit users 1103, edit event e-mails 1104, edit biller
 22 agreement 1105, and password change 1106.

1 Upon selection by the payer system administrator of the edit payer profile 1101
2 function, the system may redirect the payer system administrator to a payer profile
3 section 1107 for editing the payer's profile information. The system may permit
4 company data to be entered and/or edited for the following exemplary fields (which the
5 system may be adapted to store as global information on the database): name, address,
6 city, state, zip, country, SIC code, TIN, organization type, show invoice list columns,
7 language for local country presentation, and currency for payment. The system may
8 provide additional functionality for displaying an "instant payment" interface and a
9 default settlement dates selector. At the instant payment interface, the system may permit
10 the administrator to edit the company's instant payment terms that are used for payment
11 of invoices in the system. The system may allow a payer system administrator to
12 establish a threshold payment amount for instant payment. If an invoice comes in with a
13 value less than the threshold amount, the system may be adapted to immediately initiate
14 and authorize the invoice. When the 810 is loaded, if an invoice is below the threshold
15 amount, the system may immediately create a payment, place it in the pending queue, and
16 initiate an audit trail. Instant payment data (which the system may be adapted to store as
17 global information on the database) may include the following exemplary fields: Instant
18 payment (enabled/disabled), threshold amount, default account, default method of
19 payment, and default settlement date (due date or discount date). The default settlement
20 date may cause the system to provide additional functionality for the payer of having the
21 settlement date by default be the due date to receive discounts. The system may provide
22 the user the ability to change that date.

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1 permit accounts to be re-enabled by a payer system administrator). The e-mail may also
 2 tell the user how to connect and logon to the system. The system may provide an
 3 “assigned billers” button for accessing the edit assigned billers page 1111, where the
 4 administrator may assign billers to the current user. At this page, the system may display
 5 the name of the payer and user at the top to establish the context of the edit. At this page,
 6 the system may display a list-box that contains all billers currently assigned to the
 7 current user and a list-box that contains all billers currently not assigned to the current
 8 user. The system may provide two buttons to allow billers to be added or removed from
 9 the assigned list. The system may provide a “permissions” button for permitting access
 10 to the permissions page 1112, wherein the system may permit a user's permission scope
 11 to be narrowed to an organizational subset of the assigned biller. At this page, the system
 12 may allow the administrator to modify permissions associated with the current user. At
 13 this page, the system may display the name of the biller and user at the top to establish
 14 the context of the edit. At this page, the system may display a list of permissions
 15 available to the currently selected user. The system may determine the permissions
 16 available by the permissions available to the current administrator. Permissions (which
 17 the system may be adapted to store as global information on the database) may be
 18 inherited. The system may display in a list of permissions the organizational defined
 19 nodes. A single node may be assigned to the user. By default, a user may have full
 20 permissions. The system may permit the desired permission set to be selected for the user
 21 and then saved with a “save” button. The system may provide a “cancel” button for
 22 exiting and discarding all changes. The system may provide a number of pre-defined
 23 payer privilege profiles to simplify the security model. The system may permit the

- 1 administrator user to choose one of these to give a new user a particular set of
2 permissions. From there, the system may allow permissions for that user to be altered.
3 Exemplary pre-defined payer privilege profiles (which may be stored as global
4 information on the database) may include:
- 5 • Security Administrator: May have all payer profile and administration permissions,
6 including the ability to set-up and delete ID's, bank accounts and the payer profile
7 itself. The system may not allow this ID to be connected to any billers or any
8 processing permissions. The system may permit this ID access to the security
9 administration report only. The system may permit this ID only to be set-up by
10 the system SuperUser.
 - 11 • Receiving Supervisor: May be provided with a button called "adjust an invoice".
12 With this new button, the system may permit a receiving administrator to be able
13 to review an invoice and make changes. However, the system may restrict change
14 permissions to quantity adjustments only. The system may link or map this type
15 of ID to an individual biller or group of billers.
 - 16 • Purchasing Manager: May be provided with the buttons for list all invoices; approve
17 invoices (keeping all adjustment capabilities intact); pending payments without
18 the cancel payment privilege; invoice history and biller directories. The system
19 may permit all these permissions to be filtered by biller if the ID were assigned to
20 a particular biller or subset of billers.
 - 21 • Payables Administrator: May have permissions for initiate payments, with one new
22 feature, the ability to create a general invoice adjustment only prior to creating a
23 payment order; pending payments without the cancel payment privilege and

1 payment history. The system may permit all these buttons to be filtered by bank
2 account and biller if the ID were assigned to a particular subset of bank accounts
3 and/or billers. The system may assign this ID the following reports: return items.

4 • Payables Manager: May have permissions for authorize payments; pending payments
5 with cancel payment permissions; payment history; invoice history; payer profile
6 and biller directories. The system may allow this role to be filtered using dollar
7 amount and may assign this ID the following reports: return items.

8 • Controller: May have permissions for list all invoices; pending payments without
9 cancel payment permissions; payment history; and invoice history. The system
10 may assign this ID the following reports: cashflow forecasting; outstanding
11 invoices; discount management; adjusted invoice history and security
12 administrator

13 • Cash Manager: May have permissions for pending payments without cancel payment
14 permissions. The system may assign this ID the following reports: cashflow
15 forecasting report.

16 • Payables Systems Administrator: May be responsible for managing the daily file
17 export routine for both unpaid invoices and payments.

18 Upon selection by the payer system administrator of the event e-mails 1104
19 function, the system may redirect the payer system administrator to an event e-mail
20 section 1113. In this section, the system may permit a list of payer system users to be
21 associated with specific system events. Any time one of these specific events occurs, the
22 system may generate an automatic e-mail and send it to the selected list of payer system
23 users. For example, exemplary distribution list choices may include: invoices loaded

8 Selecting edit biller agreement 1105 may cause the system to direct the payer
9 system administrator to an edit biller agreement page 1114, from which the payer system
10 administrator may access such exemplary pages as biller organization 1115, options
11 1116, and biller e-mail 1117.

The system may provide a biller organization page 1115 to address the enterprise organizational model, the goal being to simulate the business structure of an enterprise so that the proper people can have access to and see the appropriate information. Although business organizations are hierarchical by definition, this structure may be too complex for the intended system implementation. Moreover, much of what makes up an organizational hierarchy is not passed as an attribute of an invoice transaction. Instead, what may be implemented supports the specificity of the hierarchical organization, while at the same time assuming no structure. For example, a biller organization might consist of company, department, region, division or store units. Assuming that these fields are populated within the invoice transactions of the system, the system may permit permission sets to be defined, each permission set being for assigning and establishing data access rights to specific users. Each permission set may contain one or more

1 uniquely defined combinations. Three exemplary permission sets might be: Set #1 (Store
2 #1, Store #2, Store #3); Set #2 (Store #4, Store #5, Store #6); and Set #3 (Division #1,
3 Division #2). At the biller's organization page, the system may display a list-box
4 containing all the billers related to the current payer. The system may pre-select by
5 default the most recently selected biller in this session. If no biller has previously been
6 selected, then the system may not pre-select any biller from the list-box. For the selected
7 biller, the system may display the list of defined organizational elements or permission
8 sets. The system may provide buttons to add, remove and modify an entry, and may
9 further provide an edit control to allow editing of the name of the entry. The system may
10 display a second list-box containing the specific data values that make up the
11 organizational element for the selected biller. A data value may be made up of the field
12 identifier and the field value. The system may provide a combo-box that allows the user
13 to select the field identifier, and the system may provide an edit control to allow the user
14 to enter the field value. The system may provide buttons to add, remove and modify an
15 entry from this list. The system may be adapted to store biller organization data as global
16 information on the database.

17 Selecting the options function may cause the system to allow the payer system
18 administrator to establish options for a specific biller using a biller options page 1116. At
19 the biller options page, the system may display a list-box containing all the billers related
20 to the payer. The system may pre-select by default the most recently selected biller in this
21 session. If no biller has previously been selected, the system may not pre-select any biller
22 from the list-box. For the selected biller, the system may display the biller options.
23 Exemplary biller options may include: payment methods and account.

1 Selecting the biller e-mail function may cause the system to allow the payer
2 system administrator to associate a list of payer system users with a specific biller using a
3 biller e-mail page 1117. At the biller e-mail page, the system may display a list-box with
4 all the billers related to the payer. The system may pre-select the most recently selected
5 biller in this session by default. If no biller has previously been selected, the system may
6 not pre-select any biller from the list-box. For the selected biller, the system may display
7 at this page a list-box that contains all payer system users currently related to the biller
8 and a list-box that contains all payer system users currently unrelated to the biller. The
9 system may provide two buttons to allow users to be added or removed from the related
10 list. The system may be adapted to store the foregoing associations as global information
11 on the database.

12 The system may provide a password change button 1106, for directing the payer
13 system administrator to a password change section 1120 for changing password
14 information.

15 Alternative Embodiments

16 It will be appreciated by those skilled in the art that although the functional
17 components of the exemplary embodiments of the system of the present invention
18 described herein may be embodied as one or more distributed computer program
19 processes, data structures, dictionaries or other stored data on one or more conventional
20 general purpose computers (e.g. IBM-compatible, Apple Macintosh, and/or RISC
21 microprocessor-based computers), mainframes, minicomputers, conventional
22 telecommunications (e.g. modem, DSL, satellite and/or ISDN communications), memory
23 storage means (e.g. RAM, ROM) and storage devices (e.g. computer-readable memory,

1 disk array, direct access storage) networked together by conventional network hardware
2 and software (e.g. LAN/WAN network backbone systems and/or Internet), other types of
3 computers and network resources may be used without departing from the present
4 invention. One or more networks discussed herein may be a local area network, wide
5 area network, internet, intranet, extranet, proprietary network, virtual private network, a
6 TCP/IP-based network, a wireless network, an e-mail based network of e-mail
7 transmitters and receivers, a modem-based telephonic network, an interactive telephonic
8 network accessible to users by telephone, or a combination of one or more of the
9 foregoing.

10 The invention as described herein may be embodied in a computer residing on a
11 network transaction server system, and input/output access to the invention may comprise
12 appropriate hardware and software (e.g. personal and/or mainframe computers
13 provisioned with Internet wide area network communications hardware and software (e.g.
14 CQI-based, FTP, Netscape NavigatorTM or Microsoft Internet ExplorerTM HTML Internet
15 browser software, and/or direct real-time TCP/IP interfaces accessing real-time TCP/IP
16 sockets) for permitting human users to send and receive data, or to allow unattended
17 execution of various operations of the invention, in real-time and/or batch-type
18 transactions. Likewise, the system of the present invention may be a remote internet-
19 based server accessible through conventional communications channels (e.g.
20 conventional telecommunications, broadband communications, wireless
21 communications) using conventional browser software (e.g. Netscape NavigatorTM or
22 Microsoft Internet ExplorerTM). Thus, the present invention may be appropriately
23 adapted to include such communication functionality and internet browsing ability.

1 Additionally, those skilled in the art will recognize that the various components of the
2 server system of the present invention may be remote from one another, and may further
3 comprise appropriate communications hardware/software and/or LAN/WAN hardware
4 and/or software to accomplish the functionality herein described.

5 Each of the functional components of the present invention may be embodied as
6 one or more distributed computer program processes running on one or more
7 conventional general purpose computers networked together by conventional networking
8 hardware and software. Each of these functional components may be embodied by
9 running distributed computer program processes (e.g., generated using "full-scale"
10 relational database engines such as IBM DB2TM, Microsoft SQL ServerTM, Sybase SQL
11 ServerTM, Oracle 7.3TM, or Oracle 8.0TM database managers, and/or a JDBC interface to
12 link to such databases) on networked computer systems (e.g. comprising mainframe
13 and/or symmetrically or massively parallel computing systems such as the IBM SB2TM
14 or HP 9000TM computer systems) including appropriate mass storage, networking, and
15 other hardware and software for permitting these functional components to achieve the
16 stated function. These computer systems may be geographically distributed and
17 connected together via appropriate wide- and local-area network hardware and software.
18 In one embodiment, program data may be made accessible to the user via standard SQL
19 queries for analysis and reporting purposes.

20 Primary elements of the invention may be server-based and may reside on
21 hardware supporting an operating system such as Microsoft Windows NT/2000TM or
22 UNIX. Clients may include a PC that supports Apple MacintoshTM, Microsoft Windows
23 95/98/NT/ME/2000TM, a UNIX Motif workstation platform, or other computer capable

1 of TCP/IP or other network-based interaction. In one embodiment, no software other
2 than a web browser may be required on the client platform.

3 Alternatively, the aforesaid functional components may be embodied by a
4 plurality of separate computer processes (e.g. generated via dBase™, Xbase™, MS
5 Access™ or other “flat file” type database management systems or products) running on
6 IBM-type, Intel Pentium™ or RISC microprocessor-based personal computers
7 networked together via conventional networking hardware and software and including
8 such other additional conventional hardware and software as may be necessary to permit
9 these functional components to achieve the stated functionalities. In this alternative
10 configuration, since such personal computers typically may be unable to run full-scale
11 relational database engines of the types presented above, a non-relational flat file “table”
12 (not shown) may be included in at least one of the networked personal computers to
13 represent at least portions of data stored by a system according to the present invention.
14 These personal computers may run the Unix, Microsoft Windows NT/2000™ or
15 Windows 95/98/ME™ operating systems. The aforesaid functional components of a
16 system according to the present invention may also comprise a combination of the above
17 two configurations (e.g. by computer program processes running on a combination of
18 personal computers, RISC systems, mainframes, symmetric or parallel computer systems,
19 and/or other appropriate hardware and software, networked together via appropriate
20 wide- and local-area network hardware and software).

21 A system according to the present invention may also be part of a larger
22 computerized financial transaction system comprising multi-database or multi-computer
23 systems or “warehouses” wherein other data types, processing systems (e.g. transaction,

1 financial, administrative, statistical, data extracting and auditing, data
2 transmission/reception, and/or accounting support and service systems), and/or storage
3 methodologies may be used in conjunction with those of the present invention to achieve
4 an overall information management, processing, storage, search, statistical and retrieval
5 solution for a particular lock box service provider, e-payment warehouser, biller
6 organization, financial institution, payment system, commercial bank, and/or for a
7 cooperative or network of such systems.

8 In one embodiment, source code may be written in an object-oriented
9 programming language using relational databases. Such an embodiment may include the
10 use of programming languages such as C++. Other programming languages which may
11 be used in constructing a system according to the present invention include Java, HTML,
12 Perl, UNIX shell scripting, assembly language, Fortran, Pascal, Visual Basic, and
13 QuickBasic. Those skilled in the art will recognize that the present invention may be
14 implemented in hardware, software, or a combination of hardware and software.

15 The translation or mapping of EDI-type financial data, particularly of the X12,
16 UN/EDIFACT, and NACHA formats, as discussed herein, is provided herein only as an
17 example of transaction data capable of interacting with the invention and should not be
18 construed so as to limit the use of the invention solely in such a setting. While the
19 discussion herein presumes the use of the invention with respect to EDI, transactional, or
20 financial data, it is anticipated that the invention may have utility in other contexts, as
21 well.

22 Payment options such as ACH debits, credit or procurement card payments,
23 and/or paper checks may be provided. For ACH debits, a 24 hour settlement window

1 may be required, in which case the payment must be sent to the receiving financial
2 institution 24 hours prior to the settlement date specified by the payer system user. If an
3 ACH debit fails, an ACH return file may be sent from the financial institution, in which
4 case the file is loaded and each transaction may be matched against invoices with the
5 status of paid. When there is a match, the invoice in question may be reopened and rolled
6 back to the status of "verified". Paper checks may be generated internally or by an
7 external software module, wherein an output file in a format capable of being read by the
8 external module may be generated. Payment by a payer system user using a credit or
9 procurement card may also be effected, to be processed by internet or other means. In
10 this scenario, additional security levels may be included, e.g., for initiating credit card
11 payments (along with a dollar amount limit) and approving credit card payments, and
12 such appropriate credit card payment processing functionality as may be appropriate may
13 be included, as well.

14 It should also be appreciated from the outset that one or more of the functional
15 components may alternatively be constructed out of custom, dedicated electronic
16 hardware and/or software, without departing from the present invention. Thus, the
17 present invention is intended to cover all such alternatives, modifications, and equivalents
18 as may be included within the spirit and broad scope of the invention as defined only by
19 the hereinafter appended claims.

20 It should be recognized by those skilled in the art that the present invention may
21 have utility in contexts other than invoice payment, and that the parties to transactions
22 handled by the invention may be entities other than payers and billers/payees in a
23 vendor/vendee context. For example, the invention may be used in bank-to-bank

1 transactions, bank-to-consumer transactions, consumer-to-consumer transactions, and any
2 other financial transactional setting.

3 Exemplary message definitions and corresponding business objects in one
4 embodiment of the invention are listed in the table below along with a brief description of
5 the functions performed by each, wherein exemplary business objects include
6 AccountMgr, Adjustment, Agreement, Audit, ErrorHandler, FileExport, FinInstMgr,
7 GetFinTrans, GetInvoices, GetPayments, HolidayMgr, InvoiceInfo, LoginManager,
8 MsgManager, and MsgUtils:

| <u>Message</u> | <u>Business Object</u> | <u>Description</u> |
|--------------------------------|------------------------|---|
| AddAccount | AccountMgr | Adds account to a given financial institution. |
| DeleteAccount | AccountMgr | Delete account(s) from financial institution. |
| GetAccountFinInst | AccountMgr | Retrieves financial institution according to account ID. |
| UpdateAccount | AccountMgr | Update a financial institution's account information. |
| AssignBillerAdjustmentCodeList | Adjustment | Take in either a list of Adjustment Code Ids or a set of AssignBillerAdjustmentCode messages and add the whole list to the biller ID provided |
| RemoveBillerAdjustmentCodeList | Adjustment | Take in either a list of Biller Adjustment Code Ids or a set of RemoveBillerAdjustmentCode messages and remove the whole list from the biller ID provided |
| AssignPayerAdjustmentCodeList | Adjustment | Take in either a list of Adjustment Code Ids or a set of AssignPayerAdjustmentCode messages and add the whole list to the payer ID provided |
| RemovePayerAdjustmentCodeList | Adjustment | Take in either a list of Payer Adjustment Code Ids or a set of RemovePayerAdjustmentCode messages and remove the whole list from the payer ID provided |
| GetPayerAdjustmentCodeList | Adjustment | Return a PayerAdjustmentCodeList of all codes assigned to the payer for a given biller |
| GetAdjustmentCodeList | Adjustment | Return an AdjustmentCodeList of all codes that are non-biller specific |
| AddAdjustmentCode | Adjustment | Add a new adjustment code |
| DeleteAdjustmentCode | Adjustment | Delete an existing adjustment code. Does not check to see if assigned anywhere else, does not update biller/payer adjustment code tables |
| UpdateAdjustmentCode | Adjustment | Update an adjustment code specified by ID |
| GetGeneralAdjustmentList | Adjustment | Get a GeneralAdjustmentList of all general adjustments for the given Invoice ID |
| AddGeneralAdjustment | Adjustment | Add a general adjustment for a given invoice ID, update the agreement counters, and mark the invoice as having been adjusted |
| UpdateGeneralAdjustment | Adjustment | Update a general adjustment for a given invoice ID, update the agreement |

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| | | counters, and mark the invoice as having been adjusted |
| DeleteGeneralAdjustment | Adjustment | Delete a general adjustment for a given invoice ID, update the agreement counters, and check if there are still adjustments for this invoice, else unmark the invoice as having been adjusted |
| GetLineItemAdjustmentList | Adjustment | Get a LineItemAdjustmentList for a given LineItemDetail |
| AddLineItemAdjustment | Adjustment | Add a new LineItemAdjustment to the given LineItemDetail by the ID provided and update the agreement counters and the grossAdjustedTotal amount and the adjusted flag on the invoice |
| DeleteLineItemAdjustment | Adjustment | Delete a LineItemAdjustment from the given LineItemDetail by the ID provided and update the agreement counters and the grossAdjustedTotal amount and the adjusted flag on the invoice |
| UpdateLineItemAdjustment | Adjustment | Update a LineItemAdjustment for the given LineItemDetail by the ID provided and update the agreement counters and the grossAdjustedTotal amount and the adjusted flag on the invoice |
| AssignPayerAdjustmentCode | Adjustment | Assign an AdjustmentCode to the given payer Id while also providing the biller ID |
| RemovePayerAdjustmentCode | Adjustment | Remove an adjustment code from a payer using the given PayerAdjustmentCode ID |
| GetBillerAdjustmentCodeList | Adjustment | Get a BillerAdjustmentCodeList by the provided biller ID |
| AssignBillerAdjustmentCode | Adjustment | Assign / Create an adjustment code for a biller. If an adjustment code is provided, it is assumed to be accurate and the relation is set up in the BillerAdjustmentCode table. If there is no adjustment code ID provided, the info for creating one can be provided for a biller-specific adjustment code and it will establish the relation in BillerAdjustmentCode and the entry in AdjustmentCode |
| RemoveBillerAdjustmentCode | Adjustment | Remove an adjustment code from a biller. If it is a biller-specific code, also remove it from the AdjustmentCode table |
| UpdateBillerAdjustmentCode | Adjustment | Update the values in an existing BillerAdjustmentCode |
| DisplayAdjCode | Adjustment | Get adjustment codes for any biller or agreement |
| AddAgreement | Agreement | Add an agreement for a biller and payer ID combo to the system. Must have a biller ID, payer ID, customer number, and biller number |
| DeleteAgreement | Agreement | Remove an agreement for a biller and a payer from the system |
| UpdateAgreement | Agreement | Update the values in an agreement |
| GetPayersForBillerNumber | Agreement | Get all of the Payers with agreements for this biller number |
| GetNonPayersForBillerNumber | Agreement | Get all of the Payers who do not have agreements with this biller number |
| GetPayersForBillerID | Agreement | Get all of the Payers with agreements for this biller ID |
| GetNonPayersForBillerID | Agreement | Get all of the Payers who do not have agreements with this biller ID |
| GetBillersForPayerID | Agreement | Get all of the Billers with agreements for this payer ID |
| GetNonBillersForPayerID | Agreement | Get all of the Billers who do not have agreements with this payer ID |
| DeleteAgreementList | Agreement | Remove the agreements for the list of agreement IDs provided |
| GetAgreementList | Agreement | Get agreement list based on any filter |
| GetPayerAgreementList | Agreement | Returns InvoiceReviewUI Entity with payer and agreement info |
| GetBillerAgreementList | Agreement | Returns InvoiceReviewUI Entity with biller and agreement info |
| AddAuditMsgBulk | Audit | Takes a list of audit messages and inserts them into the database. Note audit messages can be of type: GENERAL, SYSTEM, SECURITY. |
| AddAuditMsg | Audit | Adds an audit message to the database. Note audit messages can be of type: GENERAL, SYSTEM, SECURITY. |
| DeleteAuditMsg | Audit | Deletes an audit message from the database. |

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| GetAuditMsgList | Audit | Gets a list of audit messages from the database |
| PostErrorMsg | ErrorHandler | Post an error message via the Selector. |
| PostError | ErrorHandler | Posts an error message directly, without a call through the Selector. The function uses ADO to access the database, instead of the standard engine calls. |
| ExportUnapprovedInvoicesToCSVFile | FileExport | Exports a list of unapproved invoices to character delimited file format. |
| ExportUnauthorizedPaymentsToCSVFile | FileExport | Exports a list of unauthorized payments to a character delimited file format. |
| ExportUnapprovedInvoicesToXMLFile | FileExport | Exports a list of unapproved invoices to an XML file. |
| ExportUnauthorizedPaymentsToXMLFile | FileExport | Exports a list of unauthorized payments to an XML file. |
| AddFinInst | FinInstMgr | Adds a financial institution to the system. |
| DeleteFinInst | FinInstMgr | Deletes a financial institution from the system. |
| UpdateFinInst | FinInstMgr | Updates a financial institution. |
| GetFinInstList | FinInstMgr | Retrieves a financial institution list for a given biller, or payer. |
| DisplayAccount | FinInstMgr | Get account lists for any filter |
| DisplayBankList | FinInstMgr | Get current bank info |
| GetFinTranList | GetFinTrans | Get a FinTranList. Can either provide where and orderby info or a list of FinTran Ids |
| GetFinTran | GetFinTrans | Get a specific FinTran by ID |
| GetFinTranReviewList | GetFinTrans | A light UI based method for getting FinTrans with a single invoice and payment |
| GetInvoiceList | GetInvoices | Get an InvoiceList. Can either provide where and orderby info or a list of Invoice Ids |
| GetInvoicesForPayment | GetInvoices | Get an InvoiceReviewUIList for a given paymentId |
| GetInvoiceHistory | GetInvoices | Get a FinTranList for payments which were batched more than 60 days ago, then display the invoices for them |
| GetInvoiceReviewList | GetInvoices | Get a InvoiceReviewUIList. Can either provide where and orderby info or a list of Invoice Ids |
| GetInvoice | GetInvoices | Get a specific Invoice by ID |
| GetPaymentReviewList | GetPayments | Get a PaymentReviewUIList. Can either provide where and orderby info or a list of Payment Ids |
| GetPaymentList | GetPayments | Get a FinTranList. Can either provide where and orderby info or a list of Payment IDs. Used FinTranList so Xpath filter could work against any criteria under it |

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|---|--------------|--|
| GetPaymentHistory | GetPayments | Get a FinTranList for payments which were batched more than 60 days ago, then display the payments for them |
| AddHoliday | HolidayMgr | Adds a holiday to a specified financial institution. |
| UpdateHoliday | HolidayMgr | Updates a holiday entry in the database with new information. |
| DeleteHoliday | HolidayMgr | Removes a holiday from a financial institution. |
| GetHolidayList | HolidayMgr | Gets a list of holidays for a given financial institution. |
| ValidateSettlementDate2 | HolidayMgr | This function can be called directly from any component without the Selector. It takes a date, and a financial institution ID. If the date is a holiday or a weekend then the next possible workday is returned. Otherwise the original date is returned in string form. |
| ValidateSettlementDate | HolidayMgr | If the date is a holiday or a weekend then the next possible workday is returned. Otherwise the original date is returned in the XML message parameter. |
| GetInvoiceCountsForUser | InvoiceInfo | Get invoice counts for the following: Invoices due today, Invoices due tomorrow, Invoices that lose discount today, Invoices that lose discount tomorrow, and Invoices that are past due. Uses the stored proc GetInvoiceInfo and passes back the counts and the Xpath to select the data set which is placed in the payer front screen hyperlinks for the counts |
| GetInvoiceStatusList | InvoiceInfo | Get the InvoiceStatus change entries for a given Invoice ID |
| AddInvoiceStatus | InvoiceInfo | Add a new InvoiceStatus record for an invoice ID |
| Login | LoginManager | Logs a user into the system, passing it a user name, and password. The user will be authenticated against his/her domain credentials as well as the NetTransact database information. |
| Logoff | LoginManager | User logs off according to his/her session ID. A session ID is needed as part of the formal message command. |
| DispatchMsg | MsgManager | Dispatches a message to the selector. If session information is needed, then the parameters in the original message body are filled in. |
| GetPayerBillerAdjustmentCodesWithAssigned | MsgUtils | Get a BillerAdjustmentCodeList for the biller supplied, match the PayerAdjustmentCodes for the payer supplied to the BillerAdjustmentCodes and set the assigned attribute on the BillerAdjustmentCodeList where there is a match. Gives a single list for what biller adjustment codes are available and which have been assigned to the payer |
| GetPayerAdjustmentCodesWithAssigned | MsgUtils | Get all AdjustmentCodes in an AdjustmentCodeList and match the PayerAdjustmentCodes for the payer supplied to the AdjustmentCodes and set the assigned attribute on the AdjustmentCodeList where there is a match. Gives a single list for what adjustment codes are available and which have been assigned to the payer |
| GetBillerAdjustmentCodesWithAssigned | MsgUtils | Get all AdjustmentCodes in an AdjustmentCodeList and match the BillerAdjustmentCodes for the biller supplied to the AdjustmentCodes and set the assigned attribute on the AdjustmentCodeList where there is a match. Gives a single list for what adjustment codes are available and which have been assigned to the biller |

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What is claimed is:

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